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News of the Industry Begins Page 708

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AUTOMOTIVE INDUSTRIES
VOLUME 55 *Philadelphia, Thursday, October 21, 1926* NUMBER 17

New Prosperity Records Set by Industry This Year

Business during first nine months far ahead of 1925. Fourth quarter volume in doubt, but outlook is fair.

By John C. Gourlie

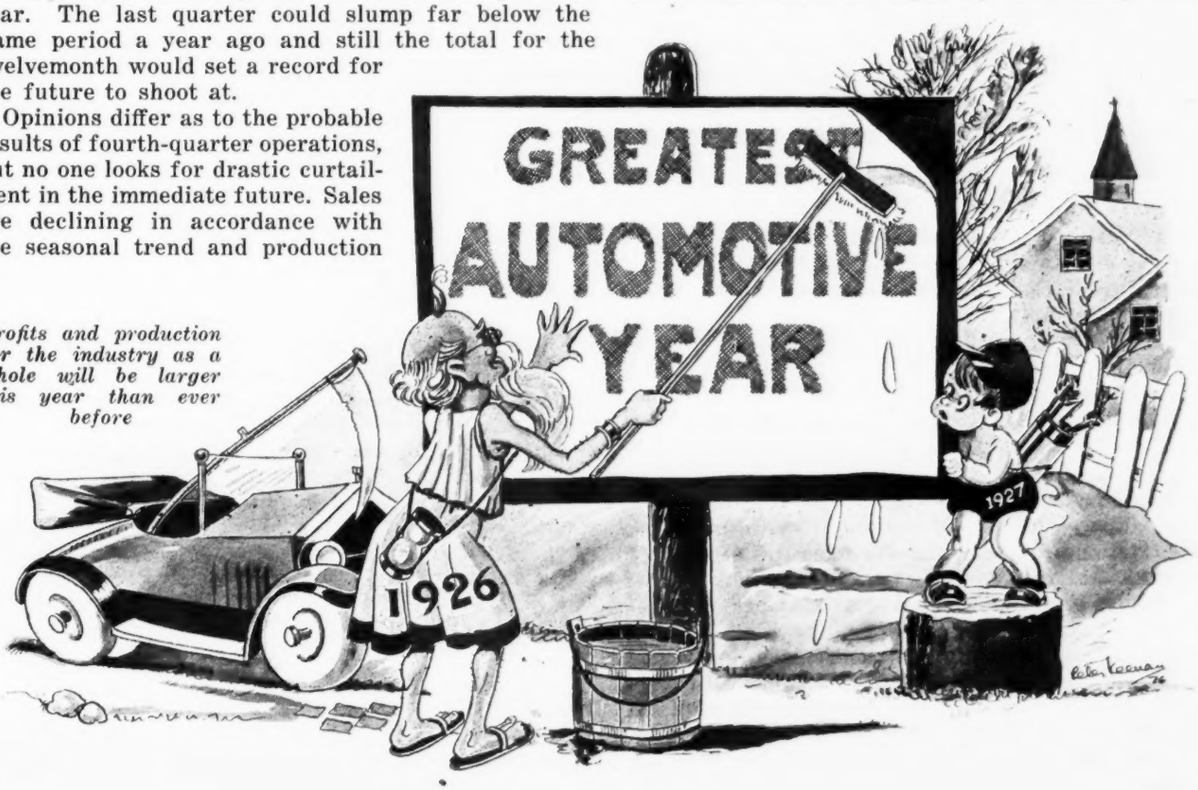
NOTHING short of a cataclysm can prevent 1926 from being the greatest of all automotive years in production, sales, profits, dealer advancement and almost everything else that goes into the picture.

Pessimists have been confounded and prophets dumfounded by the amazing volume of the retail market. So far it has been consistently better than in the first three-quarters of 1925, hitherto the industry's best year. The last quarter could slump far below the same period a year ago and still the total for the twelvemonth would set a record for the future to shoot at.

Opinions differ as to the probable results of fourth-quarter operations, but no one looks for drastic curtailment in the immediate future. Sales are declining in accordance with the seasonal trend and production with them, but the recession gives every evidence of being orderly.

On the other hand, and beclouding the outlook to an extent dependent upon the spirit of the observer, are factors that may cut down sales rather seriously.

The Florida disaster, coming on top of the subsidence of the real estate boom, is naturally expected to reduce the volume of sales there this winter. A number of cars were destroyed by the storm, but not



Profits and production for the industry as a whole will be larger this year than ever before

enough to guarantee a large replacement market, even if everyone had the funds to replace cars lost or irreparably damaged. The probability is that repairing of cars injured will be the principal activity for a time at least.

Flood conditions in Illinois and surrounding states have duplicated, in less serious measure, the effects of the Florida hurricane.

Throughout the South, and especially in the Southwest, the collapse of cotton prices may be expected to have an unfavorable effect. This marks a reversal of the outlook of a short time ago, when it appeared that prosperity unparalleled was to be the lot of the Southern farmers and merchants.

Holding to Conservative Course

Unfavorable forecasts based on these developments would be far from safe. The industry more than once has upset calculations of similar nature. But factory executives are tending to the conservative course, which means right now the reduction of inventories to the minimum, lest bad business catch them unprepared.

On the credit side are the high state of industrial activity, the gradual recovery of industries hitherto depressed, the absence of inflation signs, the generally sound condition of agricultural regions, with the exceptions noted, and, perhaps most striking of all, the growing willingness of motor car owners to exchange perfectly good automobiles, with tens of thousands of miles of unused transportation, for new vehicles whose main appeal is in more attractive color or body lines.

The style element in automotive merchandising has grown perceptibly. More and more those who have contended that the woman of the family casts the deciding vote in the purchase of a car are being supported by the facts. Last year's car is following last year's hat into the discard.

The same trend is observed in used car merchandising, and the families that buy second-hand vehicles are exchanging them for the more up-to-date vehicles that have had only a year or so of service.

The rise of tendencies such as these make more difficult the type of forecasting that depends on statistics. If, as is sometimes held, the motor car was regarded primarily and mainly as transportation, then there might be more value in studies of purchasing power, saturation points and replacement markets. As it is, the facts are apt to upset the theories, and the future seems to hold more of the same.

But some facts stand out from consideration of the current figures that hardly can be overturned. Production in the first three quarters of 1926 exceeded the corresponding months of 1925 by 15.4 per cent, including cars and trucks, United States and Canada. The increase was greater in passenger cars than trucks, commercial vehicles showing only an 8 per cent gain and cars slightly over 16 per cent.

Ford Shows a Loss

The gain was heavily to the credit of the members of the National Automobile Chamber of Commerce, whose advantage over last year was close to 25 per cent, while Ford showed a loss of more than 10 per cent.

With nine months' total output of cars and trucks this year 3,670,097, against 3,184,129, last year, the surplus so far to the credit of 1926 is 485,968 vehicles. Production in the final quarter of 1925 was 1,152,142 units, so if this figure were duplicated this year, the final output would approximate 4,822,000. No one, however, expects this to be the case, as the figures last year were inflated by the belated capacity production of the Ford Motor Co.

It is easy to see, on the other hand, that last quarter output this year could fall 400,000 below the corresponding period a year ago and still the year's output would be ahead of 1925 by a safe margin. The prospect is that the drop will be much less and that therefore the final figures will show a total well over the four and a half million mark.

Sales figures, domestic and foreign, closely follow the production totals. Never before have the manufacturers so sedulousy followed the sales curve in fixing their output schedules. At the moment, the outlook is for a total sales volume this year of over 3,700,000 passenger cars, against about 3,300,000 last year.

The sales increases have been registered almost entirely in the domestic markets. Passenger car exports for the first eight months of 1926, United States and Canada, fell below the figures for the corresponding months of 1925 by more than 3600 units. There was a gain of approximately 15,000 in truck exports to offset this loss.

Foreign assembly figures for the period indicate that the gain in them, if any, will not be sufficient to bring the passenger car total up to last year's record.

Other factors, however, may yet bring the year's total of car overseas business above the 1925 level. The losses this year were registered mainly in the summer months, which is indicative of two things—that sales to Europe are lower this year and to South America and Australasia higher. Shipments to the countries below the Equator are normally very low during the summer months, the cold season there, and this year Europe was unable to take up the slack. The fall and winter months may yet bring enough orders into the market to push the total above the last year's mark.

British Competition

A variety of reasons are assigned for the lowered car exports. The British market has been a very difficult one this year, due to the high tariff and the greatly reduced prices of British-made cars, which are now in many cases underselling comparable American makes. The producers there have done wonders in bringing down their costs through improved production practices. On the continent there has been financial unsettlement and increasing competition from Italian and French producers, but the situation there on the whole is better than in Great Britain.

Germany now is being regarded as the most favorable field for the building up of exports to the continent, as it has achieved financial stability and as American cars are high in public favor.

Aside from the possibility of much better export business in the fourth quarter, the following stand out as favorable indications for the industry:

1. The low level of dealers' stocks of new cars.
2. The fair condition of used car stocks and of the used car market.
3. The relative soundness of instalment selling virtually all year.
4. The comparatively sound state of the dealer organization generally.

More nonsense has probably been written about excessive dealer stocks than any other angle of the in-

dustry. Such stocks are not high now and they have not been for many a moon. As of the end of August, 1926, they were at the lowest point in recent history and even so they were only 15 or 20 per cent under the total at the beginning of the year. There was no large carryover into 1926, and no accumulation of any extent during the year. Nor will there be, unless the sound policy of the manufacturers is reversed.

Some increases in stocks were registered in September, and doubtless there will be further additions before the end of the year, which is no more than sound production and merchandising policy and will help the factories to maintain their output during the slack season in deliveries. It is doubtful whether at any time in the last eighteen months dealers' stocks of new cars, excluding the floating supply in transit between the factories and the distributors and retailers, have exceeded five or six weeks' normal sales requirements, and at the end of August they were less than three weeks' supply.

The summer months, which registered a high retail sales market at a time when the factories were for the most part concerned with changing over to new model production, gave the dealers an apportunity to clean up used car stocks which was not overlooked. They have begun to accumulate again, however, and vigilance and sound merchandising are again at a premium.

Factory Used Car Plans

Greater factory attention to dealers' used car policies seems more clearly than ever to be indicated as the best means to a solution, partly or wholly, of the gravest problem of the distribution end of the business. There are signs that this will be done, if not by individual factories, then by a group. Numerous used car plans for dealers in a market territory have been tried and a few have proved valuable. The wider acceptance, under factory recommendation, of one or the other of the plans might be of the greatest possible benefit, in the long run. There is probably no used-car panacea, but the effort is worth while.

A trial of such a plan would answer one of the most interesting questions to present-day merchandising—whether the excessive allowances for used cars, now so general, would, if corrected, curtail the market for new cars. If that is so it is best to face it while conditions are favorable for the experiment, with both factories and dealers in shape to stand a temporary recession. Once the public is educated to receiving only fair allowances the industry will be many times stronger than it is now.

How concerted action can remedy a serious condition has been shown this year in the field of instalment financing. When nearly all the large manufacturers decided to lend their influence to conservatism in time sales terms, an incipient credit debauch was stayed and competition placed where it belongs—in the lowering of rates rather than the extension of terms.

All indications point to greater financing stability than has existed since two years ago, when the spectre of unsound time selling first began to receive serious consideration. The readiness with which dealers have fallen in line with the policies laid down by the manufacturers is proof of the open-mindedness of the retail end where good merchandising principles are shown to animate a departure from accepted methods.

Of course the situation is somewhat different where used cars are involved. The weaker dealers might oppose factory guidance in financing and the stronger ones might welcome it; but it is the strong dealer, who has already solved his own used-car problem, to a partially satisfactory extent at least, who may resent being told that the factory would like to have him join other dealers in a cooperative plan.

Yet evidence multiplies that the used car business is the weakest point in automotive selling and so long as it remains in a state of speculation and chaos, all interests concerned are going to suffer. The dealers will suffer from inadequate profits and the factories from excessive dealer turnover and weak dealer organizations.

Automobile Production (U. S. and Canada)

	Cars	Trucks	Total
1925			
Jan.	213,851	28,203	242.054
Feb.	253,955	34,482	288,437
March	334,214	45,180	379,394
April	393,262	47,984	441,246
May	384,548	45,719	430,267
June	366,510	38,151	404,661
July	360,124	41,870	401,994
Aug.	223,517	37,850	261,367
Sept.	274,227	60,482	334,709
Total 9 months	2,804,208	379,921	3,184,129
Oct.	408,017	46,013	454,030
Nov.	337,435	40.048	377,483
Dec.	286,141	34,488	320,629
Total	3,835,801	500,470	4,336,271
1926			
Jan.	284,703	33,461	318,164
Feb.	334,524	41,685	376,209
March	399,105	49,233	448,338
April	401,836	53,887	455,723
May	394,569	51,343	445,912
June	358,365	47,070	405,435
July	328,816	41,847	370,663
Aug.	392,292	47,361	439,653
*Sept.	364,900	45,100	410,000
Total	3,257,110	410,987	3,670,097

*Partly estimated.

Automobile Exports (U. S. and Canada)

	Cars	Trucks	Total
1926			
Jan.	24,931	6,540	31,471
Feb.	28,291	8,349	36,730
March	30,311	8,629	38,940
April	25,813	9,477	35,290
May	26,097	7,979	34,076
June	18,323	6,142	24,465
July	19,718	6,926	26,644
Aug.	18,578	4,739	23,317
Total	192,062	58,781	250,843
1925			
Eight Months	195,701	43,797	239,498

Useful and logical reforms are kept from effective operation because of used cars.

When all this is said, however, the fact is nevertheless plain that dealers are in better condition this year, probably, than ever before. The excellent retail market has been primarily responsible, but the comparative stability of new car prices and the lack of crowding by manufacturers are scarcely less important considerations. Undue depreciation of used-car values has been avoided, as has the need for overallowances.

Midsummer changes in car design were perhaps more general this year than ever before, involving a slowing-up of factory operation which permitted the dealers to clean up their stocks and with the arrival of the new jobs gave them a fresh talking point for the fall sales drive. Even Ford has been dealing rather kindly with his distributing organization.

With regard to the course of prices in the next few months there is wide divergency of opinion. But here again the facts can almost speak for themselves. It is pretty plain, from an examination of production and earnings statements, that the margin left for further price-cutting by most of the companies is fairly small.

Although, as stated before, most of the big companies will earn more this year than last, and the total passenger car and truck profits will be above 1925, the gain will not be comparable with the gain in production. On the basis of 1926 prices, it is evident that earnings would be far below 1925 if the volume of output had not increased and once again spread the overhead to an extent that permitted a satisfactory margin of selling price over cost.

There is always a possibility that the effort will be made in 1927 to duplicate, with the help of price cuts, the history of the year just past. But to many this would appear to be gambling with fate. The market cannot go on expanding indefinitely, and a few months of sales under the level of expectancy could easily turn profits into losses and necessitate price advances, which certainly would not help business.

The slight declines registered this year in raw ma terial costs do not appear to justify car-price reductions. If they did, the profits of the manufacturers would reveal the opportunity. So long as wages hold up, costs are going to remain nearly at the present level, and hardly anyone believes in either the desirability or possibility of wage reductions.

Wisdom would seem to call for the maintenance of current price-lists, with perhaps the exception of the very few companies whose per unit profit is still high, or has been brought to a comparatively high point by big production gains. In this respect, some of the smaller companies seem to be in better position than some of the big ones.

W. F. Bradley

In This Issue—

What Bradley Saw at the Paris Show

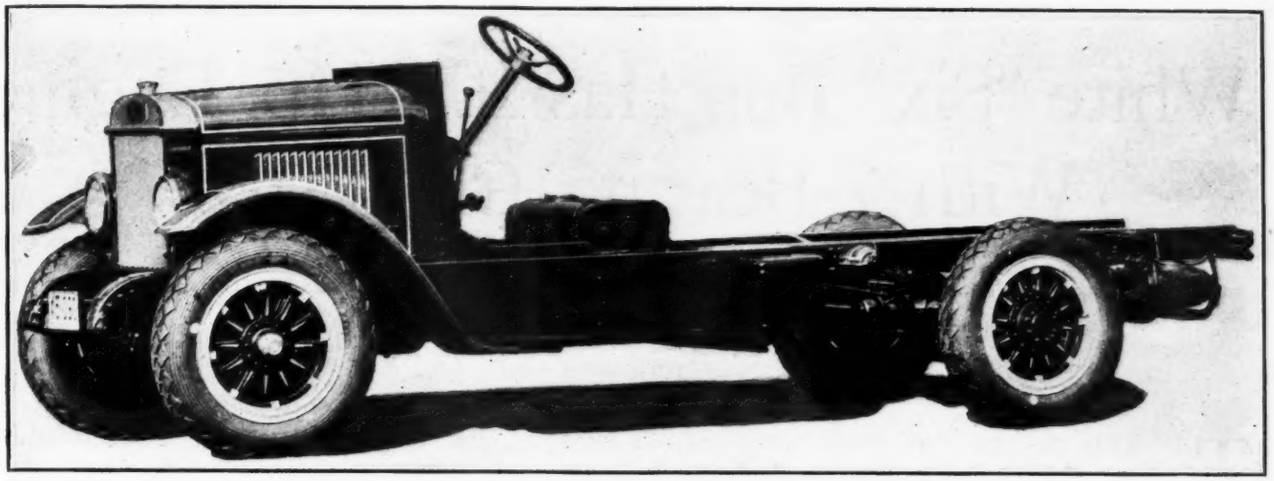
THE opening of the Paris Automobile Salon and many of the new models exhibited there were described by W. F. Bradley, European correspondent of *Automotive Industries,* in last week's issue. For this week, Mr. Bradley has sent a second article summarizing in greater detail the new trends which he discovered at the show, and throwing into relief various features of design which it was impractical to treat at length in the previous dispatch.

As a technical writer who is equally familiar with European and American automotive practice, and, therefore, able to discuss one with a thorough appreciation of its relation to the other, Mr. Bradley is probably without a peer in Continental Europe. Although his name has been a byword to readers of *Automotive Industries* for many years, very few, perhaps, know anything of him personally or realize the extent of his experience in his field. He received his technical training in England and moved to France in 1900, where he immediately became interested in the then budding automobile industry. For a few years he was engaged on daily newspaper work, including the European edition of the New York *Herald* and the *Daily Mail.*

In 1903, on the request of H. Donaldson, then editor of *The Automobile* (New York), he became Paris correspondent of that paper and devoted his entire time to automobile journalism. In 1906 and 1907 he was assistant editor on the New York staff of *The Automobile,* under the late Amos G. Batchelder, returning to France later to resume the position of European Continental representative of the Chilton Class Journal Company's publications. This work covers the whole of the Continent of Europe, but more particularly France, Belgium and Italy.

In 1914 he acted as manager of the French team which ran at Indianapolis and won first, second, third and sixth places in that race. Immediately on the outbreak of the World War he was attached as automobile driver to an English cavalry regiment, and saw service on the Marne and the Aisne. Later he was transferred to a motor ambulance unit operating with the third Italian Army Corps on the Isonzo and the Carso fronts. In June, 1917, on the request of the late Colonel Bolling, who had been sent to France to organize the Air Service, he joined that organization and was set to work on motor transport problems. The American forces being then entirely dependent on the Allies for planes and transportation, he assisted in getting together the Air Service Motor Transport Department, which was later turned over to the Army Motor Transport Corp. After this he worked on special Air Service vehicles.

As automobile editor of the New York *Herald,* he closely followed the early period of the aviation movement and was among the first passengers of Wilbur Wright and Henry Farman. During 25 years' residence on the Continent of Europe he has been brought into the closest touch with the European automobile industry.



New Autocar 1½ ton delivery truck

Special 1½ Ton Delivery Truck Latest Addition to Autocar Line

Company's standard four-cylinder engine is mounted under hood in front of driver. Bendix four-wheel brakes fitted. Headlights built into radiator for rigidity.

TYPE "A," a 1½ ton delivery chassis designed for maximum speed, durability and comfort is the latest product of The Autocar Co., Ardmore, Pa. A feature of this job is the conventional method of mounting the engine under a hood in front of the driver.

The standard Autocar four-cylinder engine, with 4 in. bore, 5½ in. stroke, crankshaft mounted on annular ball bearings and having an N.A.C.C. rating of 25.6 hp., is employed. From a 17 gal. gasoline tank mounted under the seat fuel is delivered to a plain type, automatic float feed Stromberg carburetor, and the charge is ignited by means of a Leece-Neville ignition system.

A long dry plate clutch transmits power through a Brown-Lipe transmission and a propeller shaft equipped with three Spicer universal joints to a Timken-Detroit, spiral bevel, full floating rear axle with a ratio of 5⅜. The wheel and axle bearings are of the tapered roller type.

Bendix internal brakes on all four wheels are operated by the brake pedal while the hand lever operates external brakes on the rear wheels. A Hannum semi-reversible steering gear controls the movement of the front axle, which is also a Timken-Detroit product.

Splash Lubrication

A cellular type radiator, with aluminum headers and capacity of about 5 gal. is used in connection with a centrifugal pump for cooling purposes. The engine is lubricated by a splash system with a gear driven pump located in the bottom of the crankcase.

The Brown-Lipe clutch is of selective sliding gear type, having three speeds forward and one reverse with direct drive on high. All shafts are run on tapered roller bearings. Semi-elliptic springs are used front and rear with lengths of 40 and 54 in. respectively. The frame is of pressed steel channels 5¾ in. deep and ⅜ in. stock.

Wood artillery type wheels are equipped with 32 by 6 in. pneumatic tires. The tread is 57 in. Standard equipment includes electric horn, starter, tail light, headlights, and kit of tools. An interesting innovation is that the headlights are built into the radiator in order to give them rigidity. An attractive aluminum fuse box serves also as an instrument board. Zerk chassis lubrication system is employed.

A NUMBER of railcars for service in Tasmania have been built by the Drewry Car Co. of London. These are fitted with six-cylinder engines of 5 in. bore by 6 in. stroke, the cylinders being cast in pairs. The cars have two four-wheeled trucks, of which one has all four wheels driven. Only the chassis are built in England, the bodies being built in Tasmania.

The most noteworthy feature of the chassis is the arrangement of the engine and transmission as a self-contained unit quite distinct from the main frame. The power is transmitted to the driving wheels through a gear-box, countershaft and chains. The countershaft also includes a reversing gear, so that all the speeds are available in either direction, and can be slid longitudinally on its bearers for adjusting the tension on the chains.

The gear-box case is of aluminum, the gears being designed to provide three speeds of 8½, 15½ and 30 miles per hour at normal engine speed. The shafts are of nickel steel and are mounted in ball-bearings. The gear change is effected by a sliding gear and dog. The reversing box is also of aluminum.

White "Six" Bus Has 100 Hp. Engine With 7-Bearing Crankshaft

Overhead valves, four-wheel air brakes, balloon tires, double drop frame and two-stage springs are other features. Wheelbase is 227 in.; maximum width 90 in.

THE White "Six" bus chassis which was first given publicity at the A.E.R.A. show at Cleveland, features seven items of design all of particular interest as indicating trends in the design of buses. These features are: Six-cylinder, 100 hp. engine; seven-bearing crankshaft; overhead valves; four-wheel brakes; balloon tires; double drop frame and two-stage springs.

The powerplant consists of a six-cylinder, 4⅜ by 5¾ in. engine, with cylinders cast in block and overhead valves, mounted integrally with the clutch and transmission. The clutch is of the two plate, dry disk type while the transmission is selective with four speeds forward and one reverse.

The crankshaft, mounted on seven bearings, is statically and dynamically balanced. Lubrication is by pressure feed to the main crankshaft, connecting rods and piston pin bearings from a gear pump located in the sump. Pistons and cylinders are under constant spray of oil through metered passages. An oil screen insures a constant supply of clean oil under pressure.

A positively driven centrifugal pump circulates water through ample cylinder and cylinder head water jackets, the water being cooled by means of a radiator with a cast aluminum shell with removable core, the entire assembly being mounted flexibly on the chassis frame.

A vacuum system furnishes fuel from a 46 gal. tank mounted in a cradle on the right side of the frame. The fuel gage is mounted directly on the tank.

Battery ignition is used with two spark plugs per cylinder and both hand and automatic control of spark advance. The electric system consists of a two unit, 12 volt, voltage-regulated starting and lighting, single wire system. The generator is of 30 amp. capacity while the battery has a capacity of 112 ampere-hours at 20 ampere rate.

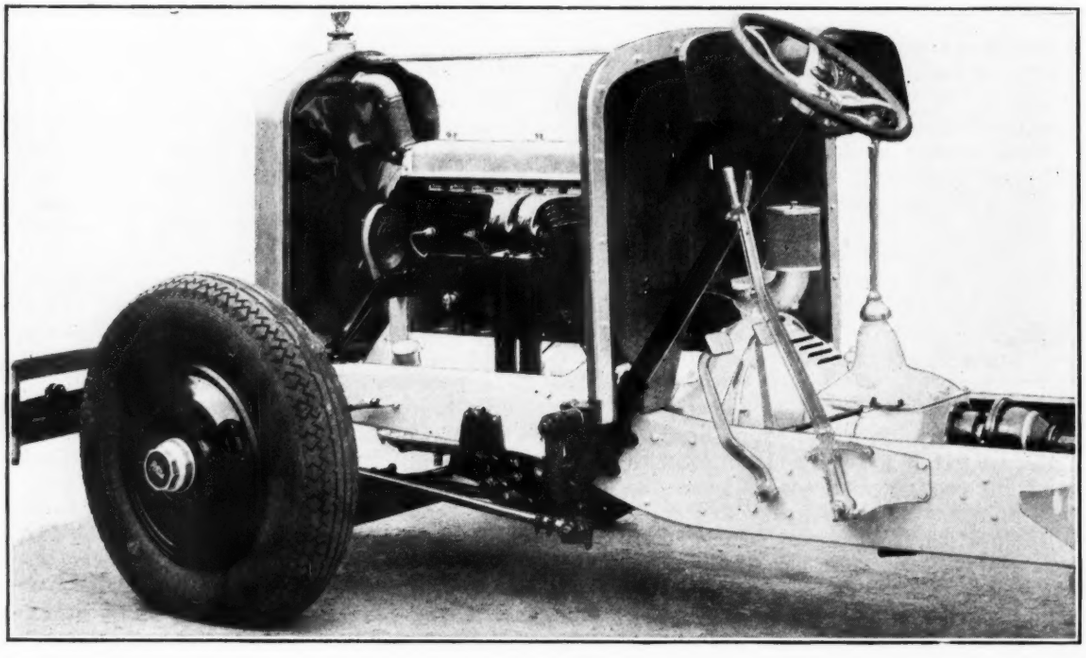
Tubular shaft drive fitted with three universal joints is employed. The rear axle is semi-floating, single reduction type with taper roller wheel bearings. Gear reductions to meet all operating conditions are available.

Air Brakes and Metal Shoes

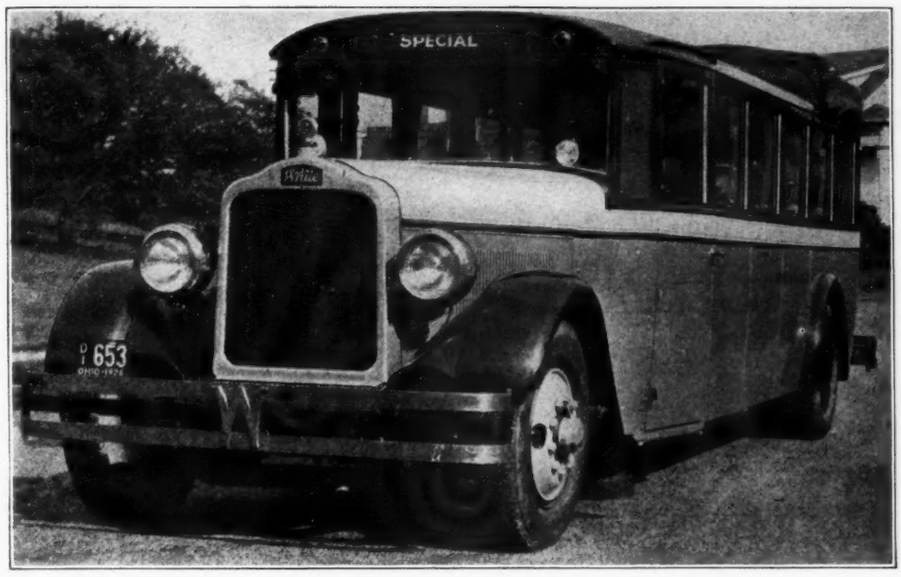
Westinghouse air brakes operating metal shoes are fitted to all four wheels while an emergency brake operates on the propeller shaft. Cam and lever steering gear is employed with spark and throttle controls mounted in the center of the steering column.

Front springs are 48 by 3 in. Rear springs are of the two stage type with dimensions of 64 by 4 in. All springs are semi-elliptic. Pressed steel, heat-treated, of channel section is used for the frame. Depth of the channel is 9⅞ in., maximum flange width 3½ in., and thickness 3/16 in.

The front axle is of the inverted Elliott type, drop



View of new White "Six" bus showing chassis details and engine



White six-cylinder bus

forged with semi-center point steering. Taper roller wheel bearings are fitted. Steel disk wheels are standard and are fitted with 38 by 9 in. balloon tires all around—dual on rear—as standard equipment, or with 34 by 7 in. high pressure tires as optional equipment.

Standard equipment includes front bumper, spare rim and wheel, electric horn, headlights, Moto-Meter, aluminum toe boards and full set of tools. General dimensions of the chassis are:

Wheelbase—227 in.
Total overall length, including bumpers—335⅜ in.
Dash to center line of rear axle—185 in.
Dash to end of frame side rails—259 in.
Total width of chassis over tires—front, 84 in.
Total width of chassis over tires—rear, 90 in.
Tread—front, 66¼ in.
Tread—rear, 70½ in.
Height of frame at front door, loaded, 21½ in.
Turning radius, 36 ft.

Italian Car Production

FROM a report recently issued it would seem that 1925 was a very good year for the Italian automobile industry, though it is rather difficult to get at definite figures of production by reason of the almost complete absence of statistical material on the subject. It is, however, possible to form an idea of the general situation. According to unofficial statistics, there were in service in Italy in 1925, 115,000 vehicles, whereas the number in use in 1924, according to official statistics, was about 83,000, inclusive of commercial vehicles. From this it will be seen that the use of motor vehicles greatly increased in Italy in 1925, and it was during that year that the popular priced car first secured a firm hold in that country.

Italy, during 1925, exported 29,024 cars (including 12,020 weighing between 880 and 1980 lb., 14,396 weighing between 1980 and 3520 lb., 2,291 weighing between 3520 and 5500 lb., 291 weighing between 5500 and 8800 lb. and 291 weighing more than 8800 lb.).

If the number of cars exported is added to the increase in circulation, one arrives at a figure of 61,000. However, to obtain an accurate figure for the Italian production it is necessary to add the number of cars replacing those that were scrapped and to deduct the imports. The number of cars scrapped may be taken at about 15,000, while the number of cars imported was 4811 (including 2083 weighing between 440 and 1980 lb., 2478 weighing between 1980 and 3520 lb., 174 weighing between 3520 and 5500 lb., 75 weighing between 5500 and 8800 lb. and 1 weighing more than 8800 lb.).

From this it would appear that the Italian production during 1925 attained a figure of approximately 70,000. Now, in view of the fact that a single firm produced nearly two-thirds this number, it is quite certain that the total production is even higher than this. The author of the report states that while the figures presented are not absolute, they are substantially correct, and they lead to the conclusion that while at the present time there is no over-production, properly speaking, the tendency toward over-production is certainly present and signs of a crisis have appeared recently.

The strong increase in the number of cars in service in Italy and the growing exports constitute the favorable elements of the situation. The exports increased from 10,400 cars in 1921 to 11,370 in 1922, to 12,750 in 1923, to 18,930 in 1924 and to 29,024 in 1925. In certain export markets the Italian industry meets strong competition from America, France and England; the American exports having amounted to 550,000 cars in 1925, the French to 65,000 and the British to 17,000 (having increased to this figure from 4,000 in 1921 and 1922.

It should, moreover, also be noted, that the Italian imports of automobiles have greatly increased in recent years, viz: from 336 in 1922 to 918 in 1923, to 1648 in 1924, to 4811 in 1925 and to 567 during the first two months of 1926. Formerly the vehicles imported were chiefly of French origin, but during the past two years the majority came from the United States. While the average value of the exported cars was 25,000 lire the average value of imported cars was only 12,000 lire. This proves that the imports were made up chiefly of small, low priced cars and would seem to indicate that the Italian industry is not in position to satisfy the home market for vehicles of this class.

Undoubtedly there is still a great undeveloped market for automobiles in Italy, when one considers the proportion of cars in use to population and compares it with similar figures for adjoining countries. The greatest obstacles to increased use are the poor state of the highways, the high cost of fuel and the high taxes imposed on motor vehicles. The chief demand is for a popular priced vehicle, and several firms which entered the industry in 1925 devote themselves exclusively to this type. This was reflected by the recent Milan Exposition. This year there were 20 Italian manufacturers as compared with 16 in 1924.

Fig. 1. Charging side of Dodge heat-treating department. Trays are loaded at left and transferred to electric furnaces at right by electric charging machine in foreground

Electric Equipment Reduces Dodge Heat-Treating Costs

Furnaces in both carburizing and heat-treating departments are electrically heated and major portion of handling work is done by electrically operated machinery. Heat loss low.

By Walter L. Carver

ELECTRIC equipment is a powerful factor for maintaining uniform, high quality and securing economy in the heat-treating departments of Dodge Brothers, Inc. Not only are the most modern types of electric furnaces used in both the carburizing and heat-treating departments, but, as compared with the former methods, the major portion of the handling now is done by electrically operated machinery.

From the angle of improved quality, the chief advantages of both electric carburizing and heat-treating furnaces are the more uniform heating effect and improved accuracy of temperature control. While these are the outstanding advantages in this respect, other elements which have a bearing on economy of operation also tend to improve quality. Working conditions are much better, smoke is eliminated almost entirely and the oppressive heat of the average department of similar nature is removed. The heat loss of the furnaces is very low, due largely to the practically direct application of the heat to the work, good insulation and absence of the usual flues.

The low cost of heat treatment and carburizing is brought about not only by the low maintenance cost of electrical equipment but by the avoidance of the expense and inconvenience arising from delivery of fuel oil in winter, when heating of tank cars is often necessary. Also the variations of viscosity sometimes interfere seriously with accurate regulations of burners in oil fired furnaces.

As the result of observation over a long period, and careful computation, it is stated that the total radiation loss in either the carburizing or heat-treating department is less than 15 per cent. During last winter, when only half of the furnaces had been installed in the electric heat-treating department, it was necessary to place salamanders around the room in order to keep the men from complaining of the cold.

Fig. 1, which shows the electric furnace charger in the heat-treating department, also gives a general impression of the layout there. The furnaces are placed in a single line in the center of the room. All charging is done at the ends shown in Fig. 1, while the discharge ends are shown in Fig. 2. A 10-ton overhead crane runs the length of the building and serves both sides of the band of furnaces. The building proper is practically all steel construction with a vee roof equipped with ventilators. Curtain type steel doors form most of the lower portion of the walls and it is through these that stock is delivered to the department and removed by electric shop trucks.

Trays used in conjunction with the electric charger are placed on structural steel racks for loading with parts to be heat treated. These racks are the same height as the floors of the furnaces and are located near the curtain type wall. The distance between these racks and the charger tracks is about the same as that between the tracks and the furnace doors. An unusual feature of these trays is a sliding bottom which is engaged and operated by a small, quick-acting ram carried on the under side of the main arm of the charger.

When a tray is loaded and the furnace is ready, the electric charger is run into position by the operator who rides as shown in Fig. 1. The charger arm is swung around and engaged with the bracket on the tray. The charger then is lined up with the desired furnace, the correct position being determined by a pointer on the charger carriage which lines up with a steel rod set in the floor near the furnace. The furnace door then is lifted by electric push buttons which control the motors and gearing placed above the furnace line. As the ram of the charger introduces the new charge, the heated charge which lies on the alloy floor of the furnace is pushed out by the front end of the advancing tray. Then the ram is backed up slightly and the bottom of the tray is withdrawn, depositing the fresh charge on the furnace floor. By means of the ram, the tray then is tilted upward slightly so as to clear the fresh charge and withdrawn from the furnace as shown in Fig. 3. The doors are lowered again by electric control and the new heat is begun.

Fig. 2. Discharge end of electric furnaces showing row of tanks with basket which receives parts coming out of furnace in foreground. These baskets are handled by the overhead crane

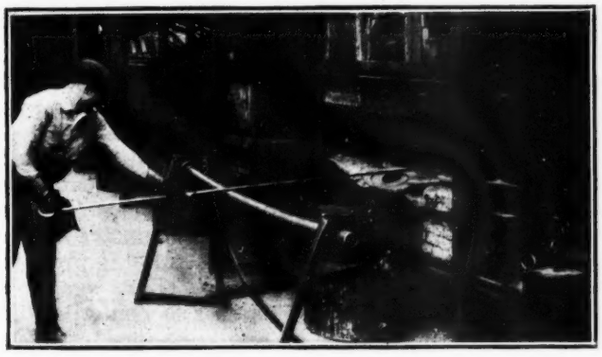


Fig. 4. Contrast the first three illustrations with the former method of handling parts in this department

The entire operation of removing the heated charge and introducing the fresh takes place in a fraction of a minute. This is one of the factors which contributes to the low radiation loss.

General construction of the charger is evident from Fig. 1. The tracks run the entire length of the battery of furnaces and are flush with the floor. Direct current for the operation of the motors on the charger is supplied by a line placed above the loading ends of the furnaces, the trolley being shown in the left background. This illustration also shows the entire charging crew, which consists of the charger operator and a man who opens and closes the furnace doors.

When pushed from the furnace by the ram, the heated parts drop directly into the quenching tanks within which are submerged heavy steel baskets as shown in Fig. 2. After the charge has cooled, the

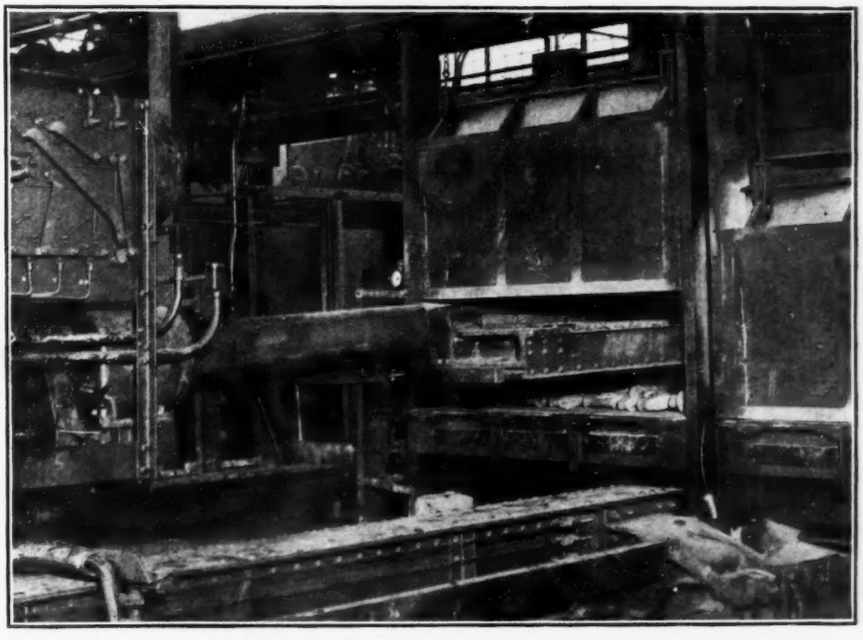


Fig. 3. Charging machine has deposited new heat on floor of furnace and is elevated for withdrawal

Fig. 5. Carburizing department which features continuous circular electric furnaces with the charging done by elevating electric trucks

baskets are elevated to allow draining and then are moved to the unloading floor by the overhead electric cranes.

Control of the entire battery of furnaces is centralized at a station midway of the length of the line. Recording pyrometers detail the progress of each heat. Due to the absence of combustion within the electric furnaces and the clean action of the charger, maintenance costs and lost time for relining or repairs are at a minimum figure. These items are held down to a further extent by running the furnaces constantly until repair work is necessary. No shut-down is made over week-ends and the department operates day and night. Perhaps no statement regarding the advantages of the department as organized could present its advantages as well as Fig. 4, which illustrates a typical scene in the old heat-treating department.

In general effect, the new carburizing department resembles the heat-treating department, the outstanding difference being the installation of rotary furnaces in place of the box type furnaces of the latter department. Another outstanding difference is the presence of electric lift truck type chargers. Here again the furnaces are placed in a line in the center of the room. However, instead of one wide-span overhead crane, separate cranes serve each side of the room.

Fig. 5 shows a section of the new layout. As in the heat treating department, these furnaces operate

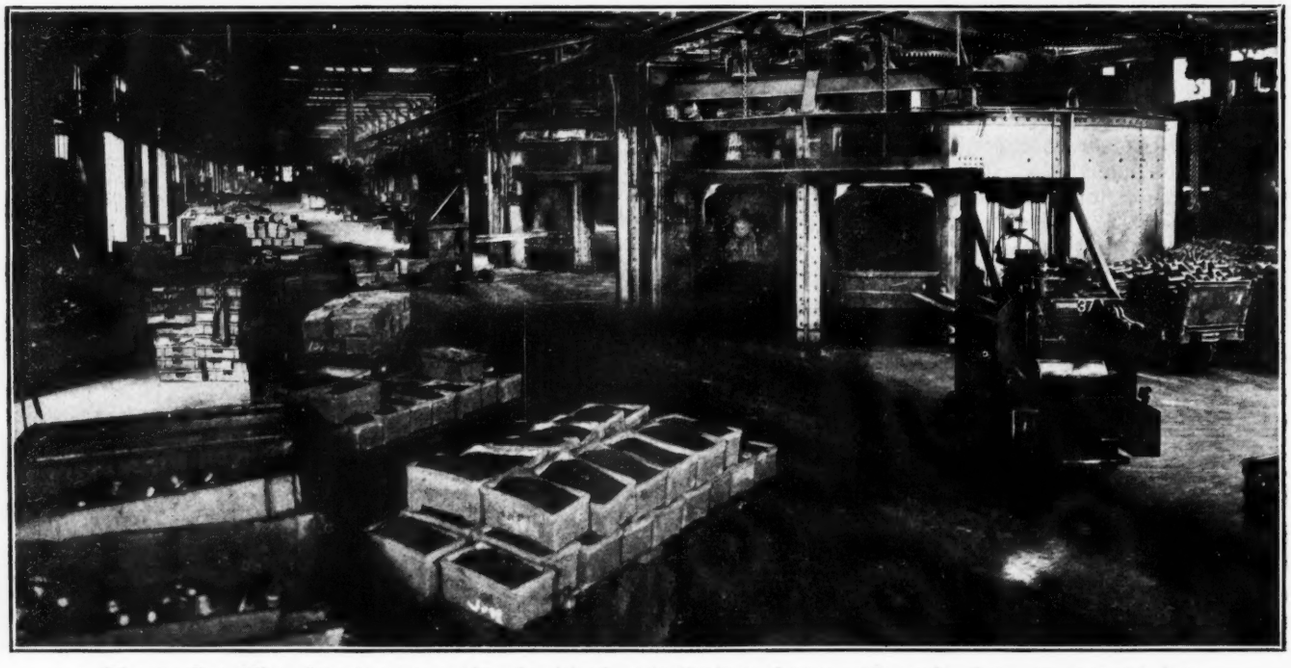


Fig. 6. Cyaniding department, equipped with electrically heated pots and overhead cranes for each bay

continuously and are shut down after periods of long duration for renewal, six of eight-month runs being not uncommon. The sand seal, which prevents heat loss at the joint between the rotary floor and the walls of the furnace, is renewed easily when necessary through a tube from a sand box at the top while the furnace is in operation.

Charging is performed by the elevating lift trucks, one of which is shown in the foreground. The forked end of the arm places the boxes on supporting blocks on the brick floor of the furnace. After the boxes are withdrawn they are placed on specially constructed racks which support them in the same manner while cooling. One door of the furnace is used for charging and the other for unloading. The rate of rotation of the table is timed to produce the proper case on the class of work being carburized. The three furnaces operate on different time cycles.

Gears and other parts requiring great surface hardness are given a cyanide treatment followed by a water, oil or other quench, according to the demands on the individual part. The basic arrangement of the cyanide department follows the same scheme as that of the departments previously described.

Two rows of oil fired cyanide pots, equipped with automatic electrical temperature control, are arranged in the center of the room as shown in Fig. 6. Small electrically operated traveling cranes serve the bays at each side of the cyanide pots. The quenching tanks also are arranged in rows parallel to the cyanide pots. As the consumption of cyanide in this department is almost a ton per day, adequate facilities are required for the disposal of the fumes. As shown, a forced draft system is used. Vertical lines of several inches diameter carry air from the blowers to each furnace while hoods at the top are connected to vertical stacks which project through the peak of the vee roof. Each large vertical stack accommodates four furnaces.

Properties of Heat-Treated Spring Steels

A PAPER on The Mechanical Properties of Four Heat-Treated Spring Steels was among those presented at a meeting of the (British) Iron and Steel Institute, the authors being G. A. Hankins, Prof. D. Hanson and Miss G. W. Ford. It was based on investigations made at the National Physical Laboratory as part of a systematic investigation of the properties of spring steels. Two of the materials tested were straight carbon steels, with 0.6 and 0.8 per cent carbon content, respectively, while the other two were alloy steels, a silico-manganese and a chrome vanadium spring steel. All were high grade steels supplied by leading steel makers.

The critical range of each steel was examined both by the thermal expansion method and by examining the sections of steel quenched from different temperatures. A series of plates 3 in. long was made from each steel, which were quenched and then drawn to a different temperature each. The Brinell hardness of each tempered specimen was measured and from the results thus obtained suitable tempering temperatures were determined. Hardening was effected under such conditions of temperature, quenching medium, etc., that the steel was completely converted to a martensitic structure and showed the highest Brinell hardness possible, without developing any cracks either during or after the hardening.

Tensile, endurance, impact and torsion test were carried out on the hardened and tempered steels. The 0.6 per cent carbon steel, oil-quenched from 950 deg. C., and tempered at 400 deg. C., gave an ultimate strength of over 100 tons per square inch. and an estimated fatigue limit of ± 47 tons per square inch at a Brinell number of 450. The corresponding Izod and elongation values were inferior to those of the alloy steels. The 0.8 per cent. carbon steel, oil-quenched from 900 deg. C., and tempered at 500 deg. C., gave an ultimate stress of over 80 tons per square inch, and an estimated fatigue limit of ± 40 tons per square inch, at a Brinell number of 377. This steel, however, could not be properly hardened in oil, even by quenching from 950 deg. C., and hence the effect of tempering, up to 500 deg. C., was very small. The limits of proportionality, both in tension and in torsion, were distinctly low, but the fatigue limits were not inferior to the other steels of the same hardness. The silico-manganese steel, oil-quenched from 950 deg. C., and tempered at 450 deg. C., gave an ultimate stress in the neighbourhood of 110 tons per square inch, and an estimated fatigue of ± 47.8 tons per square inch, at a Brinell hardness of 470. Tests were also carried out on the water-quenched material, and, in general, this appeared to be slightly superior to the oil-quenched steel. The chrome-vanadium steel, oil-quenched from 850 deg. C., and tempered at 400 deg. C., gave ultimate stress figures of over 110 tons per square inch, and an estimated fatigue limit of ± 47 tons per square inch, at a Brinell hardness number of 516. The Izod values of this material were distinctly superior to those of the other steels.

In the discussion the objection was made that the steels used for the test seemed to be much purer than those currently used for springs, and that the sulphur content particularly was inordinately low, but Dr. Hatfield, who summed up and replied for the authors, stated it had been pointed out in the paper that all were typical high grade steels supplied by leading makers. By means of the electric furnace process, he said, steels containing very low percentages of impurities could be made.

An explanation was called for in the discussion of the wide differences in the hardening properties of the 0.60 and 0.80 per cent carbon steel and Dr. Hatfield thought this might be due to the difference in the manganese content, which was 0.3 per cent in one and 0.8 per cent in the other.

One speaker drew attention to the fatigue limits obtained by the authors. It was quite evident that springs must not be stressed to the limit of proportionality of the material from which they were made. He had worked out a method of estimating the endurance limit and had applied it to the results obtained in the paper. His figure was considerably lower than that of the authors. Their figure for a 0.6 per cent carbon steel, oil-quenched from 950 deg. C. and tempered at 400 deg., was 47 tons per square inch; his figure was only 43. He usually found that his results worked out at about two-thirds of the figure for the limit of proportionality. In the case of the chrome-vanadium steel, his estimated endurance limit was again below that of the authors. They gave 45 tons per square inch, whereas his figure was only 39. In the case of this steel, his endurance limit was less than two-thirds of the limit of proportionality.

Quieter Exhausts Feature of Design in New British Motorcycles

Two Models equipped with superchargers at 1927 exhibition. Front fork dampers have sprung into favor. All chain drive now standard. American makers present.

By M. W. Bourdon

THE motorcycle show at Olympia, London (October 4th-9th), was notable as the first of a lengthy series at which British makers showed a real desire and intention to provide mufflers efficient from the standpoint of making the exhaust more quiet. Almost without exception a "talking-point" was made of this feature, the reason being that the Home Secretary, as chief of the police throughout the country, recently gave instructions that a higher standard of quietude was to be enforced on motor cyclists, and notified both riders in general and motorcycle manufacturers in particular of his action. Whether the new mufflers adopted by makers comply with the new standard of quietude remains to be seen, but some should do so. In one or two cases, for example, the ratio of piston displacement to cubic capacity of expansion box is as 1 to 6; ratios of 1 to 5 are found in many cases, with interior baffles of many varieties.

Larger Braking Surfaces

Apart from better mufflers, the outstanding general developments in evidence at the Show are the widespread provision of larger brake surfaces, the standardizing of balloon tires by many makers for the first time, the extensive use of adjustable handlebars, the fitting of frictional dampers for the front forks on the majority of machines and for the steering on a considerable number, and the greatly increased use of roller bearings for the connecting rod big end, as well as for crank spindles.

The expanding type of brake has almost superseded the alternatives and has drum diameters running up to 8 in., though 5 in. or 6 in. is the normal size on all except high-powered machines. Several makers are now interconnecting the front and rear brakes, occasionally with a separate control for the rear one, and there is a general tendency to depart from the practice hitherto current of fitting two sets of brakes to the rear wheel and leaving the front one unbraked. Brakes adjustable while running are found in several cases.

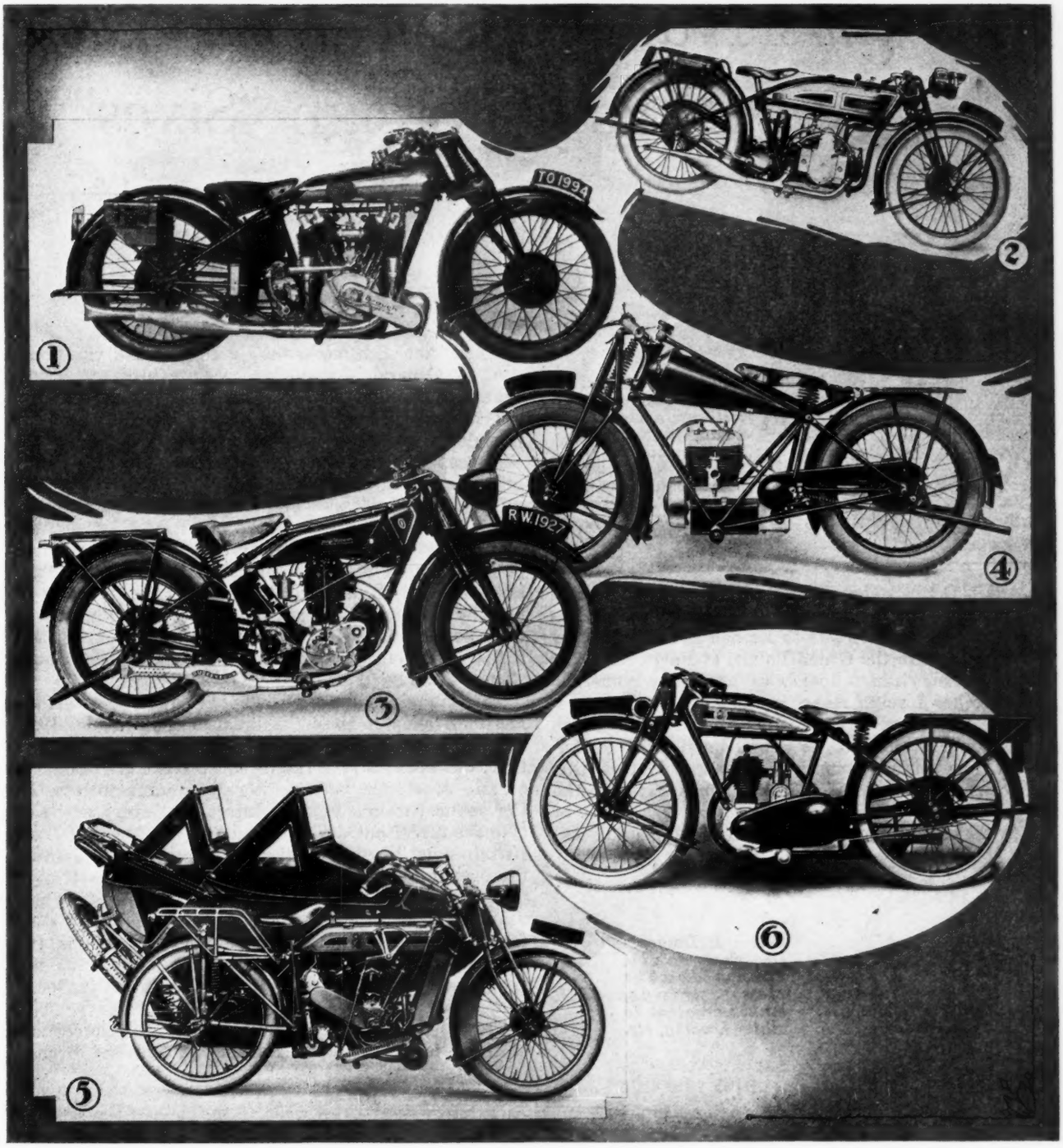
Front fork checks or dampers have sprung into favor during the past twelve months and frictional dampers for the steering are being used on machines of quite moderate speed capabilities, especially on sidecar outfits, though their advantage on solos at ordinary touring speeds are generally admitted to be more imaginary than real. Some of the steering dampers have a quick throw-out, enabling them to be taken out of use instantly, or vice versa. Saddle spring dampers are also being fitted in a few cases.

The more extensive use of roller bearings in engines is but one indication of the continued endeavors to secure higher efficiency; another is the first appearance of a standardized supercharger on a motorcycle for touring use, one model of the Victor range being thus provided.

Overhead valves are found on the majority of new models of British motorcycles, though the L-head engine is by no means dead and some of the most prominent makers have introduced new models of this type, notably Triumph with a new 277 c. c. (2¾ hp.) lightweight, which weighs less than 200 lb. in touring trim. There has been no great addition to the number of machines of 2½ hp. and under, as was the case last year; but the lightweights (2½ hp.) and ultra-weights (1½-1¾ hp.) continue to be extremely popular. Most of the new models have a piston displacement of about 500 c. c., though Douglas (who, apart from Triumph and B.S.A., has the biggest individual output of motorcycles in England) has introduced an enlarged rendering of the horizontally opposed 3½ hp. twin shown for the first time last year; the new machine is rated at 6 hp. (596 c. c.) and is offered at £58 solo as compared with £41 for the 3½ hp.

In addition to the lightweight mentioned (which is being offered at £37 without lighting), Triumph has introduced two other new models, one being a high-efficiency, twin-port, overhead valve type of 5 hp. founded on racing practice, and the other a 5 hp. side valve machine selling at £45 solo or £57 with a side car. B. S. A. by introducing a new 5 hp. overhead valve model (pushrod operation) has a range of thirteen distinct models for 1927; the new machine is of a purely sports type and it is offered, for an extra charge of £5 (£270 in all), with a specially tuned and bench-tested engine guaranteed to develop 25 b. h. p. at 5000 r. p. m. B. S. A. has also standardized a sidecar with a separately sprung wheel, a quarter-elliptic spring controlling a duplex wheel frame pivoted at the front end; the sidecar body is flexibly mounted, of course, on the axle and chassis.

All-chain drive is now nearly standard practice on British motorcycles, though at the Show were examples of very small models with belts, while one or two makers (Rover, for instance) continued models with unit power plants having a spur pinion drive from engine to gearset. Moreover, two new models by well-known British makers have direct drives from a longitudinal crankshaft to the gearset.



1. Nine hp. Brough solo, the "Rolls Royce" among British motorcycles. This model sells for £115. 2. The 3½ hp. Douglas sports model, which was shown with a supercharger. 3. New model 5 hp. Rudge-Whitworth. 4. The new Francis-Barnett. 5. The 10 hp. Matchless spring-frame model. 6. New 2¾ hp. Triumph

The two makers just referred to are P. & M. and the Francis-Barnett, and their new models are strikingly unorthodox in many respects. The P. & M. has a 246 c.c. (2½ hp.) 60 degree V twin engine, of which the transversely set air-cooled cylinders project deeply into a box-like aluminum casting forming the crankcase, clutch housing and gearbox. The valves are overhead, have leaf springs and are completely enclosed. After passing through a plate clutch and one of the four gears the drive is taken to a layshaft through helical bevel gearing and thence by chain to the rear wheels. The frame is unique in design, its "backbone" (i.e. steering head and top rail) consisting of an H section forging reminiscent of three-quarters of a light car axle.

For the first time in motor cycle history supercharged machines appeared at Olympia, though several have been seen at Brooklands Track during the past summer. Two machines were shown thus equipped, both horizontal twins, one being a Victor and the other a Douglas; the former is frankly a speed model, mainly intended for racing, but the latter is a roadster, though at present the supercharger is not being standardized.

Two makes of American motor cycles were shown, viz., the Indian and Henderson.

New *Cars* Numerous at *Paris Salon;* Many Foreign "Sixes"

Americans are pushing sales vigorously. Fabric bodies more prominent than ever.

By W. F. Bradley

A view of the passenger car exhibit in the Grand Palais, at Paris, during the twentieth annual French automobile show, which was the most important ever held in that country from the American point of view

PARIS, Oct. 12 (*by mail*)—Europe and the United States are the words most often pronounced in connection with the twentieth French automobile show now being held in the Grand Palais, at Paris. For the first time American automobiles are more numerous than all other foreign makes combined.

Unlike any previous year, the American firms are backing their display in the Grand Palais with an important commercial campaign. General Motors this week opened show rooms in the Champs Elysees; the new Erskine—described in *Automotive Industries* of Oct. 7—is being advertised on a really big scale and the fact that such men as the president and vice-president of General Motors, the vice-president of Studebaker, the president and chief engineer of Pierce-Arrow, the chief engineer of Packard, among many others, have thought it worth while to come to Paris, has made the European industry realize that America is now really interested in foreign trade.

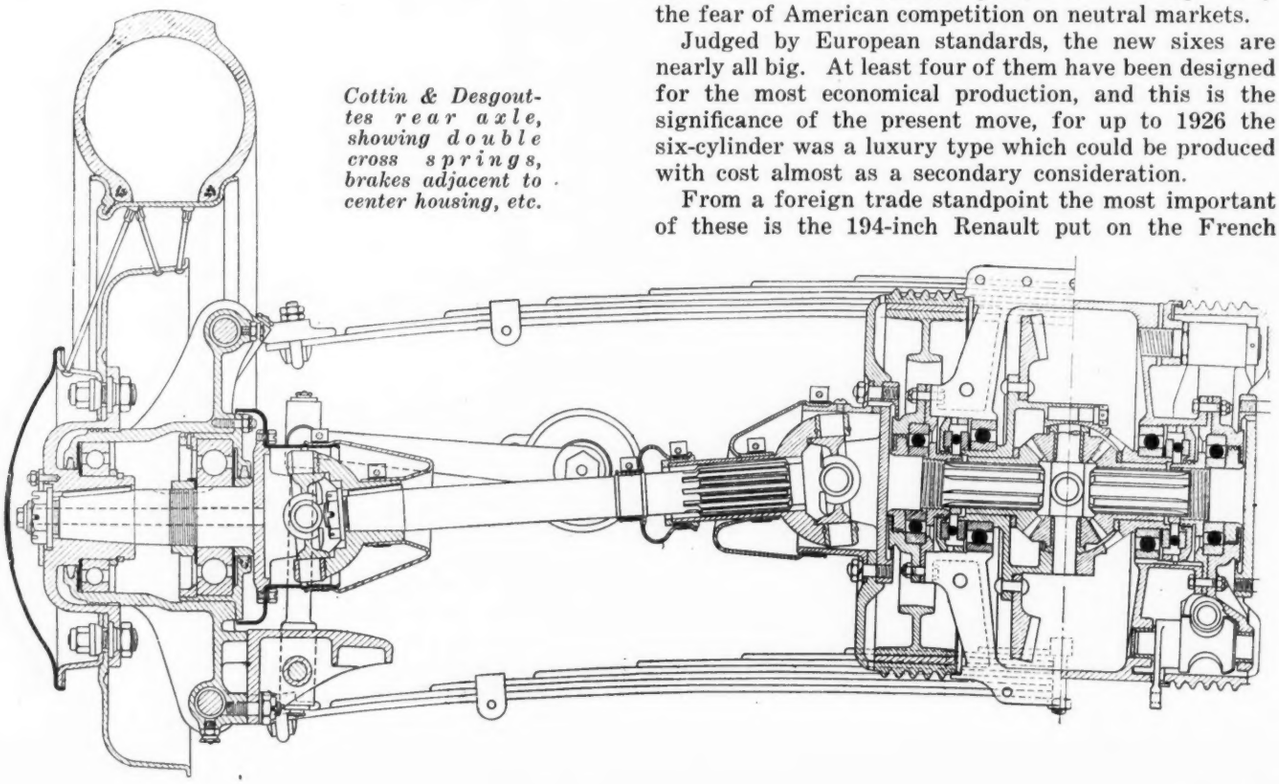
The real significance of this move is to be found in the influence it has had on the minds of European engineers. It is no exaggeration to say that nine-tenths of the changes made during the last two years have been dictated either directly by American practice or by the changing attitude of the buying public by reason of their familiarity with American automobiles. Not a few engineers, putting aside all questions of amour propre, frankly admit this.

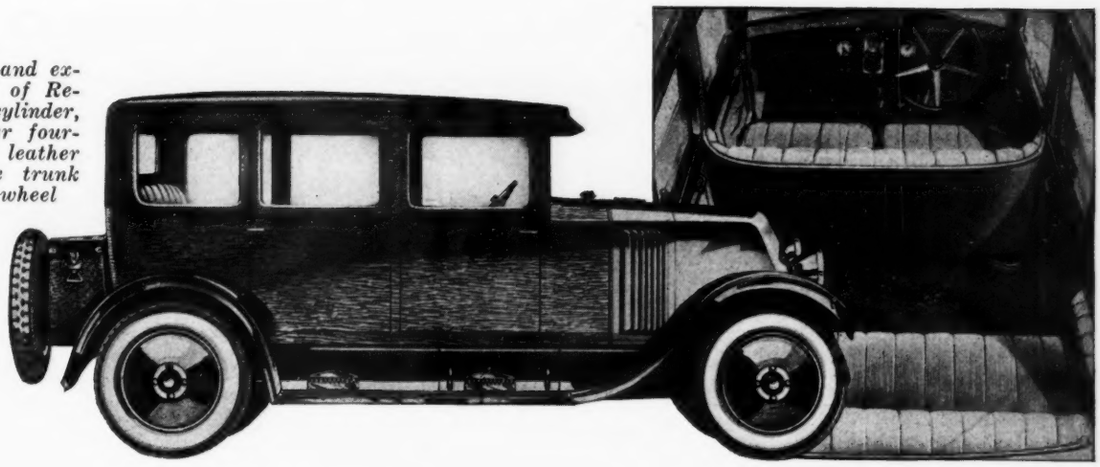
This is a six-cylinder year, but if this type of engine has been adopted it is not because a strong local demand existed for something better than a four-cylinder type, but because of foreign markets and the influence certain American qualities were beginning to have on the public. It is safe to maintain that every new six-cylinder model put down in Continental Europe (Great Britain must be considered apart) has been inspired by the fear of American competition on neutral markets.

Judged by European standards, the new sixes are nearly all big. At least four of them have been designed for the most economical production, and this is the significance of the present move, for up to 1926 the six-cylinder was a luxury type which could be produced with cost almost as a secondary consideration.

From a foreign trade standpoint the most important of these is the 194-inch Renault put on the French

Cottin & Desgouttes rear axle, showing double cross springs, brakes adjacent to center housing, etc.





Interior and exterior views of Renault four-cylinder, five-passenger four-door fabric leather sedan, Note trunk and spare wheel

market with a sedan body at 47,000 francs ($1340 at present exchange). As the home price of an American car is automatically doubled by the time it reaches France, it is obvious that Renault can outsell the importers on his own territory. The competition will not come in France, however, which is the second most highly protected country in Europe, but in neutral markets.

Undoubtedly the sleeve valve Minerva of 122-inch piston displacement has been brought out to meet American competition in Belgium and on foreign markets. Its selling price in Belgium is 37,500 francs for chassis only. Although not so well known internationally, the Donnet Zedel has during the last two years climbed up to fourth position in France and is at present building a factory with an output of one hundred cars per day. In designing the new six-cylinder power plant, Engineer Sainturat, who formerly was connected with Hotchkiss and Delage, has obviously closely studied American engine practice, although the rest of the car has a decidedly European character. The L-head type of engine with cylinders and crankcase in one casting has a four bearing crankshaft, separate unit starter and generator, combined intake and exhaust manifold with a hot spot, an American air cleaner, and a belt driven water pump with a radiator fan on the same shaft. A turbulence type of head is employed. Working in conjunction with the Arbel Forges, sheet metal stampings are used, to the exclusion of aluminum, on as extensive a scale as on American cars.

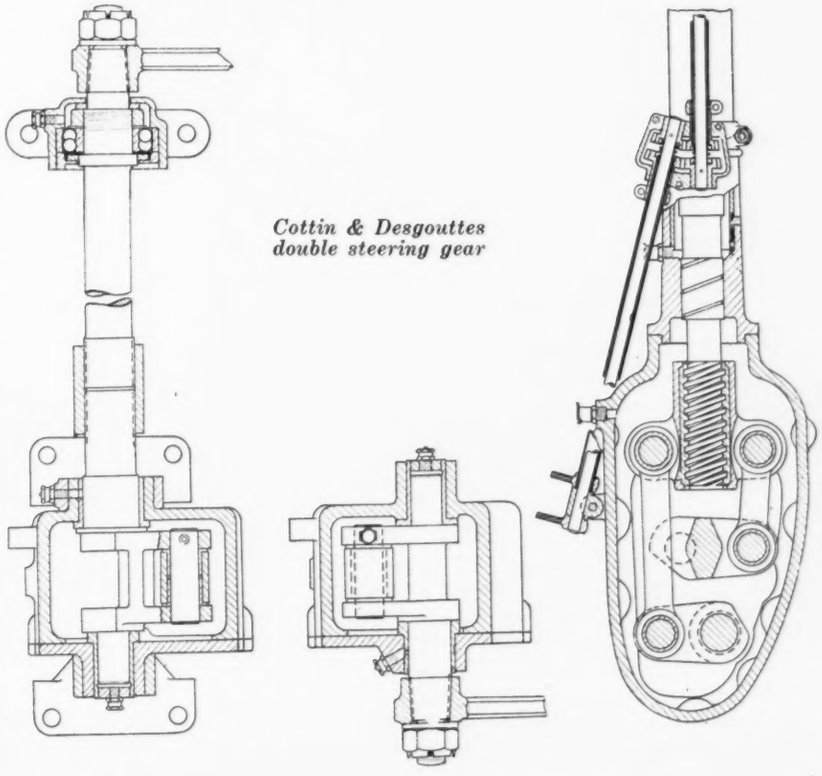
Back of the hood European practice has been followed, with four speed trasmission, enclosed drive shaft, having a ball bearing at the center of its length, and four-wheel Bendix brakes. A feature is the attachment of the axle to the springs. Instead of the axle housing oscillating on the spring pads, a lug is forged with the axle and the spring is pivoted to this by means of a bolt going through the lug and the extremities of a broad clip holding the leaves together. This decreases the neutral portion of the spring by about four inches. The L-head Nagant six is another six-cylinder engine having been designed to meet competition from American cars on the Belgian market.

The Ballot six cylinder of 122-inch piston displacement, which presumably will replace the four cylinder model of the same size, has an overhead camshaft with a two-stage chain drive. Another chain driven overhead camshaft job is the 91½ inch six cylinder Steyr.

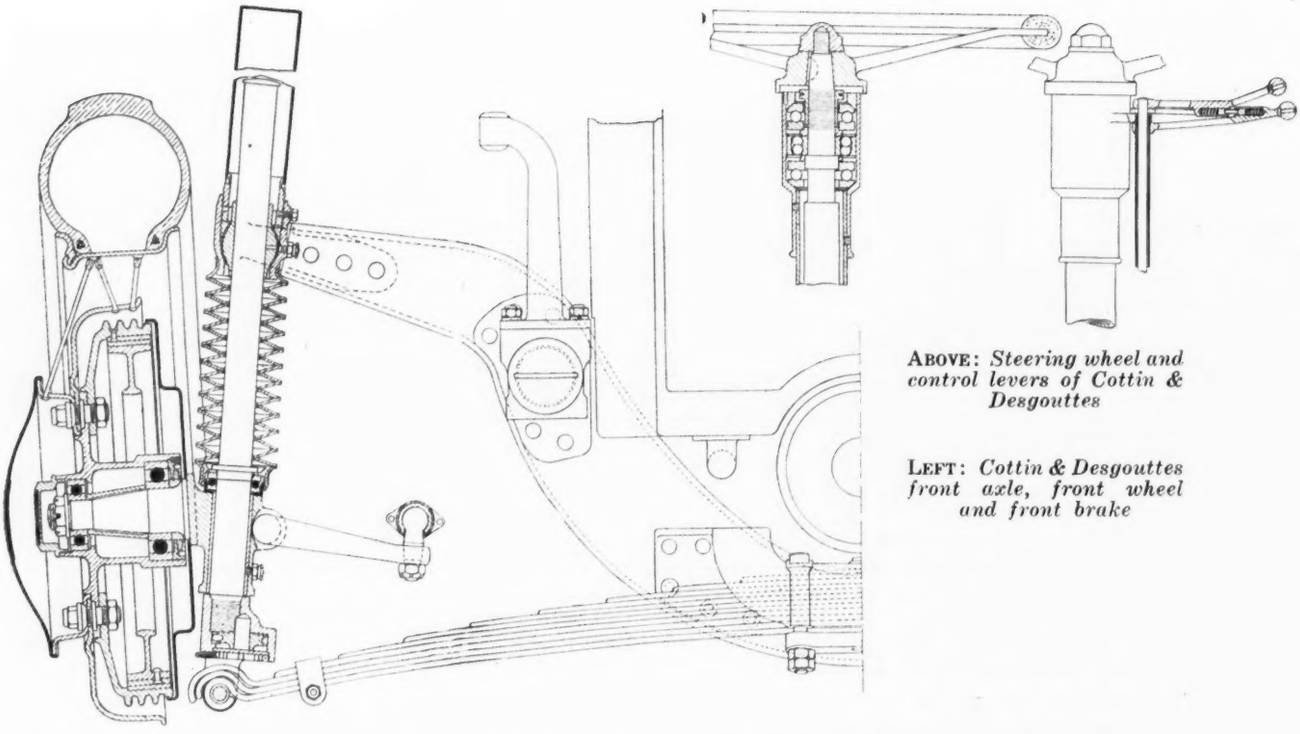
Alfa Romeo has produced two 91½ inch six cylinder engines, of same general design, one having a single overhead camshaft driven from the rear and the other two camshafts also with rear end drive. All the auxiliary devices are driven off the rear and both engines are provided with Delco ignition.

Undoubtedly the L-head type engine has strengthened its position by reason of lower cost of production and progress made in the use of turbulence heads.

Among the changes made in engine design is the more extensive use of a single unit generator and start-



Cottin & Desgouttes double steering gear



ABOVE: *Steering wheel and control levers of Cottin & Desgouttes*

LEFT: *Cottin & Desgouttes front axle, front wheel and front brake*

er mounted on the forward end of the crankshaft. This is common on both cheap and high class jobs, including Voisin and Panhard & Levassor. In nearly all cases the voltage is 12, although Cottin & Desgouttes has 12 for the generator and 24 for the starter. An important percentage of the new models have the water pump set in the water jacket and driven by a one-piece belt. A fan is usually mounted on the pump shaft. To eliminate a drive the radiator fan is often on the generator shaft. This has been adopted by Citroen on his new model.

In adopting a new six Panhard & Levassor has followed previous lines of construction with only detail modifications.

A Larger Voisin Model

In addition to a 141-inch six which already is in production, Voisin has produced a bigger and more expensive model, not expected to be delivered until May or June of next year, in which a lot of interesting features are to be found. Following on this a campaign in favor of rational weight distribution, Voisin on the new six has put the gas tank inside the frame, to left and right of the drive shaft, just ahead of the axle. The engine, which is a sleeve valve type, has dry pump lubrication with the six gallon oil tank under the cowl. The filler for this tank is under the hood and is similar to that for the gas tank. The engine has a bore and stroke of 86 by 140 mm., the cylinders being one casting and having sleeves operated by a single eccentric shaft. Magnesium pistons are employed. The crankshaft is carried in three bearings, lubricated under pressure and the oil is sent through the clutch shaft to the gearbox with a flow to the bearings and to the teeth and is returned by a scavaging pump, through a special filter, to the main supply tank on the cowl. Advantage is taken of this lubricating system to supply oil to the brake operating mechanism mounted on the clutch and transmission housing.

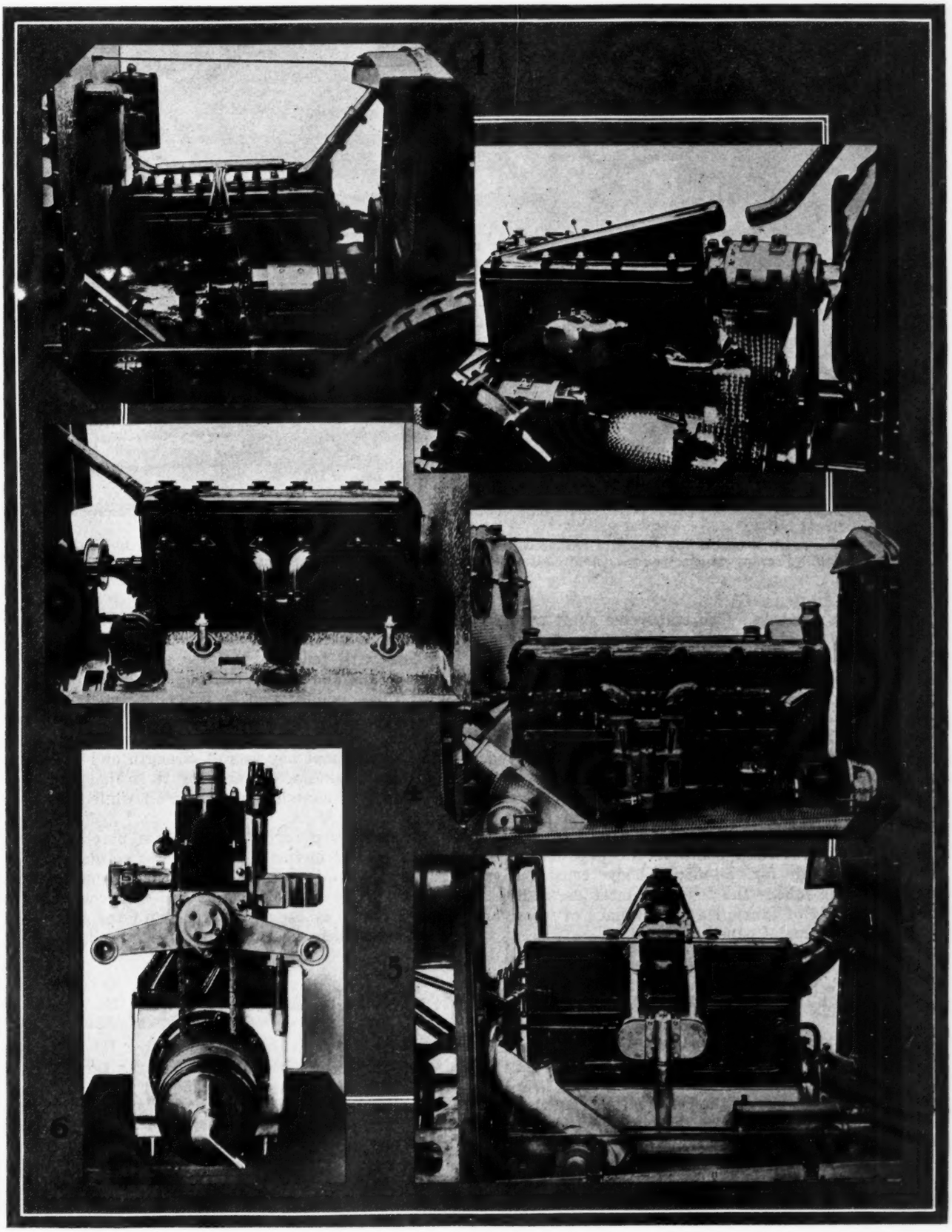
Alpax metal with iron liners has been adopted for the cylinder casting of the big six cylinder Farman of 100 by 150 mm. bore and stroke. The saving in weight by the use of this metal, compared with cast iron, is 130 pounds. Separate steel valve seats are used. The inside of the water jacket is enameled under pressure.

Four wheel brakes are now standard equipment on every car built in Continental Europe. Only the mechanical type with internal expanding shoes is used. The only point of discussion now is whether a servo mechanism shall be used. Two years ago this appliance was limited to cars of the most expensive class, but since then the Dewandre-Repusseau and the Westinghouse vacuum types have been brought out and have been rather extensively adopted. The most important move is the adoption of the Westinghouse servo brake by the Citroen Company for application to one of the cheapest cars on the French market. With about 20 per cent of the total number of makers using the Dewandre-Repusseau type of servo, the probabilities are that its use will extend.

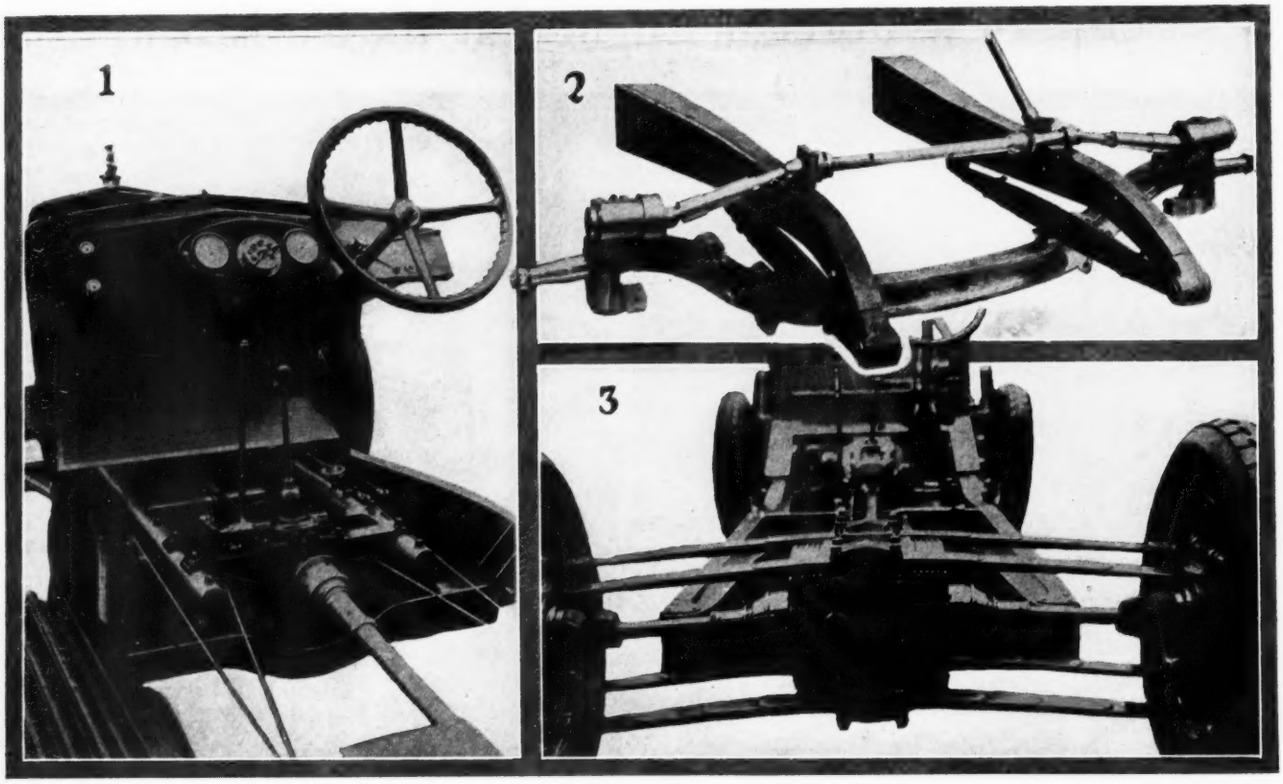
Most notable among the attempts to improve riding qualities are those of the Farman and the Cottin & Desgouttes Companies. Farman has experimented for the last two or three years with transverse suspension and, incidentally, as the result of these experiments, was led to the adoption of duplicate steering. The final model has a transverse spring front and rear, with anchorage of the front axle by means of a torque arm on one side and a radius rod on the opposite side and the use of a stabilizer at the rear to prevent lateral displacement of the axle in relation to the chassis. There are supplementary longitudinal springs under the side rails front and rear, the main leaf only carrying load when the car is empty and the six supplementary leaves coming into action under full load. So far as springing is concerned, front and rear are identical, the differences being in the method of attachment of the axles to the frame.

The duplicating steering definitely adopted by Farman is of the hourglass type of worm and disc mounted on each extremity of the axle and operated by a telescopic and universally jointed shaft carried in bearings

Some New Foreign Engines at the Paris Salon



1. Berliet six cylinder big production job. Oil purifier is fitted. 2. De Dion Bouton with radiator fan on generator shaft. 3. Six-cylinder Panhard-Levasser sleeve valve engine. 4 Carburetor side of new 122 in. Ballot engine with chain driven overhead camshaft. 5. Voisin 14 hp. six-cylinder sleeve valve engine. 6. Front view of Voisin bix six, showing combined starter and generator and belt driven water pump with two water inlets



1—New small Ansaldo has separate transmission mounted on tubular subframe. 2—Farman duplicate steering. Transverse springing is now used. 3—Quadruple suspension on Cottin & Desgouttes chassis

on the frame members. The transverse shaft is operated from the steering wheel by means of bevel gearing. The new type of forward transverse springing, with the spring anchored to a transverse frame member lends itself particularly well to this type of steering gear. To accommodate this gear a specially shaped brake drum has to be used and hollow spoke Alpax wheels covered with an aluminum disc, are employed. With the exception of a few cases of transverse spring, among them being the Steyr with independently sprung rear wheels, there are no other new developments in suspension.

Citroen, with a Budd plant, is the only maker in France equipped for all-metal body construction. Among all the others the tendency most decidedly is towards the use of fabric leather in place of wood, or wood and sheet metal paneling.

A patented construction shown by Lucien Bollock provides for a metal frame on which the body is built, complete with fenders, radiator shell, hood, running boards, trunk and tire carrier and attached to the chassis at three points; two at the rear and one at the front. Being independent of any weaving which may set up in the main frame, the body construction can be very light without any loss of strength and the manufacturing advantage claimed for it is that capital is not tied up by chassis having to wait while bodies are being built on them.

In two years pyroxlin painting has practically supplanted the old methods of paint and varnish. Originally these cellulose finishes were all of American origin, but in view of their cost at present exchange rates, local activity has been displayed, with the result that numerous French substitutes have been produced.

Three-Engined Airplanes Coming to the Fore in Europe

THREE-ENGINED airplanes are coming more and and more to the fore in Europe. Aside from the Armstrong-Whitworth and Handley-Page three-engined machines in use on the Imperial Airways routes, England now has three more three-engined ships. Of these, the Handley-Page "Hamlet" is a small machine and has not yet been subjected to official flight tests. A three-engined flying boat, the Blackburn "Iris" has just completed its tests. It is powered with three Rolls-Royce engines of a total of over 2000 hp. It has demonstrated its ability to climb and maneuver on any two engines and can fly with but a very slight loss in altitude on one engine. Its characteristics make it possible for the designer to develop this machine into a very useful commercial craft. The third of the British three-engined ships is the De Havilland "66" which will be used by Imperial Airways.

In spite of the short time that has elapsed since aircraft building restrictions have been lifted from Germany, the Junkers Company has already constructed a three-engined plane of over 1000 hp., while Adolph Rohrbach has built a ten-passenger all-metal three-engined airplane. This latter ship is of the high wing monoplane type and is of practically cantilever construction, a single tension wire being used on each side. The Junkers ship is typically Junkers in construction, with a low wing of high lift characteristics. Of course this ship is also of all-metal construction.

Just Among Ourselves

Watch for New and Smaller Eights

THIS year seems certain to record a definite increase in the number of eight-cylinder cars on the market and particularly the development of several eights priced about the same as some of the upper middle price-class sixes. There are strong indications that at least three new smaller eights will be announced between now and the end of the New York Show in January. On the basis of number of models shown, of course, the six still will be the predominating design, with the fours, led by Ford, Chevrolet, Dodge, Star and Overland still comprising the chief model from the standpoint of total production.

* * *

We Find Out What a Queen Thinks About

FOR the next few months we may expect to have available for continuous public consumption a mass of information concerning the actions, clothes, opinions and whathaveyou of Marie, Queen of the Rumanians. That this columnist may not be behind the times, he hastens to comment on the automotive aspects of this impending visit of beauty and royalty. Queen Marie attended the Paris automobile show and, according to Associated Press reports, "she spent a considerable portion of her time looking at American cars and remarked that she often wondered how it must strike the eyes of Europeans, who, for the most part, are pedestrians, when they first enter the traffic of a country where almost every family has its own automobile." Certainly we have here an event and a remark of most portentous magnitude in the history of automotive development. We've often wondered what Queens wondered about and now we know. She wonders not about the cotton crop; not about the high wages demanded by the pants makers union; not about what keeps Coolidge so silent; not about any of the million and one things available for Queens to wonder about. No, sir. She has been wondering about how American traffic would strike the eye of a European—and that's not the only part of a European which American traffic has been known to strike, as the Queen may find out if she eludes her official entourage and tries her luck incognito and on foot before returning to the safety of Rumania, where the total number of motor vehicles probably is not much in excess of 15,000. Any further automotive developments of import which may occur in connection with the Queen's visit will be faithfully recorded in these columns—maybe.

* * *

Educate Motorists to Use Their Cars

DOES the average man know how to use his automobile? Why, certainly, most of us will reply. What else are the 20,000,000 car owners doing but using their cars? F. C. Russell, in the Sept. 30 issue of *Printers' Ink*, says they don't, nevertheless. "An automobile is passed along to the consumer on the theory that he'll be a past master at using it," Russell states, and continues: "Nowhere are people using their cars so extensively as they should." Fear of traffic, lack of knowledge of secondary roads for Sunday travel and other things keep many cars idle, he argues. The industry ought to do as the soap manufacturers, the wheat growers and others have done; go out to show the public how it can use automobiles more and thus increase automobile use—and consequently the number of cars which will be needed to replace those worn out.

* * *

N.A.C.C. Booklet a Step in Right Direction

RUSSELL mentions the N.A.C.C. booklet about "Getting the Most Out of Your Car" and concedes that it was a step in the right direction. But the little that has been done along this line is only a drop in the bucket, in his opinion. It would take too long to present his whole reasoning adequately, but we commend his views as being well worth thinking about. In addition to trying to sell new cars, the industry might find a way to get people to wear out their old cars quicker—ways which the public would enjoy. Other industries have done it.

* * *

Service Managers Help to Design New Truck

THERE has been lots of talk during the past year or two about the growing importance of service in automotive merchandising. We learned the other day of one company which developed a definite method for considering service on a par with the other elements of motor vehicle design. In the design of the light delivery truck recently announced by the Autocar Company, a Design Committee was employed to pass on the work as it progressed. This in itself is not unusual but the Autocar committee included among its members the service managers from three of the company's largest branches and these service managers are said to have had equal voice with the sales, production and engineering departments in determining the final design.
—N. G. S.

Gear Men Told of Research Results Obtained With Lewis Machine

Progress of work at Massachusetts Institute of Technology described by Earle Buckingham at semi-annual meeting of gear manufacturers. Paper read on use of hypoid gears.

By P. M. Heldt

THE first results obtained in the research work on gears carried out at Massachusetts Institute of Technology with a machine designed by Wilfred Lewis were presented to the American Gear Manufacturers Association at its semi-annual meeting at Briarcliff Lodge, N. Y., Oct. 14-16. This research is being carried on by funds contributed by members of the Association and by other industrial firms through the American Society of Mechanical Engineers. The work done at the M. I. T. was reviewed in a paper by Earle Buckingham.

Others papers of prime technical interest were read by F. E. McMullen of the Gleason Works, on "Conditions Governing the Use of Hypoid Gears," and by George M. Bartlett on "Recent Developments in High Speed Chain Drives."

As usual, much attention was given to the advancement of the standardization work of the Association, and a number of new Recommended Practices were adopted. Two new members were elected, namely, the Falk Corp. of Milwaukee, Wis., and the Skoda Works of Prague, Czechoslovakia, which is represented in this country by Joseph Kveton, located at Detroit.

Golf was also on the program and A. C. Woodward won the *American Machinist* Cup donated by Mason Britton of that publication, his score being 82.

President Frost's Address

In his opening address, President E. J. Frost of the Frost Gear & Forge Co., Jackson, Mich., called attention to the fact that at its next meeting the Association will have rounded out the first decade of its existence. The Association now has about ninety member companies.

In the early years much time and effort were devoted to bring about at least an approximation to a standard method of cost finding. Mr. Dunn, who had charge of this work, felt that much of this effort was wasted, but he, the President, could not agree with this. It set most of the members thinking, and if it did not accomplish more than that, it was time and effort well spent.

"In all our attempts at standardization," said Mr. Frost, "be it technical or commercial, we have always had distinctly in mind Federal Laws, and I think it can be truthfully said that no member of this Association wants to kill honest, intelligent competition, or circumvent existing laws, but we are anxious to eliminate entirely, or at least so far as seems feasible after careful analysis, futile wastes due to a wide variety of designs where a few are sufficient, and we do want our entire membership to study costs so thoroughly that no essential items will be omitted when making up a quotation. We want blundering and guesswork, and false assumptions regarding overhead and machine hour values as applied to a given job, to be a thing of the past, and we have had every assurance from the Department of Commerce in Washington, that these things are desirable."

As is his practice at these meetings, Chairman B. F. Waterman of the General Standardization Committee read first the report of that committee, which was in the nature of a review of the work done during the past half year by the various sub-committees and of the reports which were to be made by them, and then a report of the Sectional Committee on Gears of the American Engineering Standards Committee. E. W. Miller, of The Fellows Gear Shaper Company, Springfield, Vt., read a report as the representative of the Association on the Research Committee on Gears of the A. S. M. E. In reply to a question, Mr. Miller stated that about half of the funds contributed to the work so far had come from members of the A. G. M. A., and the opinion was voiced that the Association had not received enough credit for its share in the work in the reports issued so far.

A brief paper on "Do We Know Our Business?" by W. H. Diefendorf of the Diefendorf Gear Corp. and dealing with some of the evils in the business, was read in the author's absence by Honorary President Sinram.

The Keyway Committee, of which R. B. Zerfey is now chairman, has made many attempts in the past to get through a standard system of keyways and keystocks for gears, but so far has not succeeded. The difficulty has been that there have been two different committees working on this same subject, a sub-committee of the Sectional Committee of the American Engineering Standards Committee on Cold Rold Shafting, and the committee of the A. G. M. A. referred to. It is, of course, highly desirable that the systems of keyways worked out by these two committees should be identical over that range of sizes over which they overlap.

The Sectional Committee has now adopted its standard and one feature of it with which the A. G. M. A. Committee could not agree was that it contained no 5/16 in. key, jumping directly from ¼ to ⅜ in. Most of the gear men feel that this is too big a step, and they would like the 5/16 in. size standardized. For gear work also a considerably wider range of sizes than covered by the Sectional Committee standard,

which ends at a shaft diameter of 6 in., is considered desirable. There is also some disagreement in regard to square and flat keys—as to whether both kinds shall be standardized for all sizes of shafts or square keys for the smaller sizes and flat keys for the larger ones.

At one point of the meeting it had been decided by vote to proceed with a standard different from that of the Sectional Committee, but in view of the fact that it would be highly undesirable to have two key standards covering the same range and the further fact that practically all other standards were adopted by what amounted substantially to a unanimous vote, while the vote on the key standard was very close, it was later desired to rescind this action and to work further with the Sectional Committee with a view to final agreement.

Westinghouse Experiences

In this connection it is of interest that Mr. Eaton of the Westinghouse Electric & Mfg. Co. said his company had formerly used the 5/16 in. key, but since the adoption of the standard by the Sectional Committee they had abandoned it and had experienced no trouble.

Another point brought out in the discussion (by W. H. Phillips of the A. D. Nuttal Co.) is that for hardened gears or pinions it is necessary to have a definite fillet in the corner of the keyway, as otherwise there is too great concentration of stress. It was therefore suggested that the system of keys and keyways to be adopted should be limited to untreated gears and that keys for hardened pinions should be dealt with later.

W. J. Eberhard presented a progress report for the Tooth Form Committee. This committee is working on 14½ deg. and 20 deg. full depth tooth forms using straight sided basic racks. This would logically have been the first problem for the committee to settle, but requests from other standardization bodies for cooperation in respect to stub tooth standardization and a request from the A. E. S. C. for completion of the work on the 14½ composite tooth form interrupted this work.

Among the problems now before the committee are the following: Standardization of a 20 deg. unmodified basic rack. A gear system involving a group of pressure angles of either three or five. A long and short addendum system for the 14½ deg. full depth tooth to avoid interference between racks and pinions of less than 32 teeth. This system would be similar to that adopted by the herringbone committee for its 20 deg. pressure angle herringbone gear teeth, involving enlargements.

Questionnaires sent out to members of the Tooth Form Committee showed that there existed considerable difference of opinion on these problems and it is the present aim of the committee to bring about a greater uniformity of viewpoint.

The committee also is still working on the subject of tip reliefs for hobs.

The committee also has tabulated diameter enlargements required to prevent undercutting between pinion and rack in the 14½ deg. and 20 deg. full depth tooth systems, and the 20 deg. stub tooth system, the tabulation including enlargements necessary to avoid interference with rack teeth as well as with generating tool points.

It is planned to issue these tables as engineering data, with the hope that eventually a standard practice can be adopted. The 20 deg. stub tooth diameter enlargements now in use for pinions are large enough to avoid undercut with the point of the generating tool, whereas the 14½ deg. enlargements now in use avoid undercutting with the mating rack, but not with the point of a generating tool. This difference in practice should be eliminated if possible.

L. F. Burnham of the R. D. Nuttall Co. had made for the Spur Gear Committee an investigation of the subject of shaft holes for such gears. The result of this investigation led him to believe that the proper way to proceed was to tabulate delivered hp. for pinions of minimum number of teeth, for varying r.p.m., for bores and pitches. It is proposed to tabulate bore by quarter inches. The method of using these tables is as follows:

1. It must be assumed that the designer knows the horsepower and r.p.m. He selects a shaft stress of 4000, 6000, or 8000 lb. p. sq. in. as seems best suited to conditions. He determines bore, it being the intersection of a straight edge between r.p.m. and horsepower points.

2. Having the bore required for the driving shaft, the r.p.m., horsepower, pitches, minimum number of teeth, and face can be read at once from table No. 1. In case more than one pitch is found applicable, the finer pitch should generally be selected, as it will give a less expensive gear set and one better proportioned to tooth stresses. The product of pinion teeth and ratio determines the number of teeth in the gear. If for some reason a definite center distance must be met, it can be done either by using the coarser tabulated pitches, by using gearing based on greater shaft stresses than 4000 lb., or by increasing the number of teeth in the pinion.

It is obvious that oversize gears and shafts might be used, faces widened, finer pitches employed or heat treating. These last, however, are not standard and separate tables must be prepared for heat treated gears.

Investigation Results

The last horsepower rating of each bore along the coarsest pitch defines the point at which any increase in speed would cause pitch line velocities in excess of 2000 ft. p. min.

The intermediate fractional bores will have to be calculated and entered upon the table to permit a continuous range of horsepowers. At present there are some gaps where no satisfactory pitch for a given horsepower has yet been calculated. Charts will be prepared showing values for 6000 lb. and 8000 lb. per sq. in. stress in shaft and also table for standard heat treated gearing.

C. B. Hamilton, Jr., made the report for the Metallurgical Committee.

Several minor changes in the phraseology of the specifications for steel castings for gears were approved, such for instance as "sufficient risers shall be provided to secure soundness and freedom from *undue* segregation," the term *undue* being inserted.

"Under check analysis:

"Analyses may be made by the purchasers from one or more (gear blanks) castings representing each melt. The chemical composition thus determined shall conform to the requirements specified above—the following being deleted: except that the carbon of the untreated or hardened and tempered grade only may vary .03 per cent above or .02 per cent below the range specified."

The Metallurgical Committee also submitted a proposed specifications for forged and drawn carbon steels for gears. These specifications so far have been passed by Sub-Committee No. 8 of the A. E. S. C. on

Gears as well as by the A. G. M. A. Metallurgical Committee. No definite action could be taken on the proposal at this meeting because it had not been submitted to the membership in printed form. It was accepted as a progress report, however.

Gear Steel Specifications

The specifications cover steels for gears in three groups, according to heat treatment, as follows: (a) case-hardened gears; (b) unhardened gears; (c) hardened and tempered gears.

It is provided that steels shall be purchased on the basis of chemical composition and the physical properties are to be omitted, but where definite physical properties are called for the requirements as to carbon content shall be waived.

The steels may be made either by the open hearth or electric furnace process, and a sufficient discard is to be made from each ingot to ensure freedom from injurious piping and undue segregation. The chemical compositions of the different grades of steel are as follows:

Use	Class	C	Mn.	Phs. Max.	S Max.
Caseh'd	C	.15-.25	.40-.60	.045	.05
Untreated	N	.25-.50	.40-.60	.045	.05
		.40-.50	.40-.60	.045	.05
Hardened	H	.40-.50	.40-.60	.045	.05

In class H only the combined manganese and carbon shall be between a lower limit of .85 per cent and an upper limit of 1.05 per cent.

The specifications also cover Ladle analysis, Check analysis, Finish, Marking, Inspection, Rejection and Reheating.

Similar specifications, for alloy steels are being worked on by the Metallurgical Committee. The committee also is gathering data on the machinability, depth of case and a simplified inspection method by deep etching.

Reference was made to the method of identifying steel bars by painting their ends. One difficulty is that once the end has been cut off the means of identification are gone. H. E. Eberhardt said that his company painted a stripe over the whole length of the bars, but it was pointed out that this would be rather tedious and expensive in quantity production.

The Non-Metallic Gearing Committee is waiting for results of non-metallic gear tests at the M. I. T. to enable it to make a more scientific determination of the increment load due to speed with non-metallic materials.

McMullen's Paper

The paper read by F. E. McMullen on hypoid gears contained a good deal of information collected since this form of gearing was first presented to the public by the Gleason Works last summer. Mr. McMullen said:

"There is one major point that the hypoid development has permitted, and that is the ability to cut any type of tooth bearing that is desirable. For a long time, it has been known that gear teeth when case-hardened become thicker and shorter. Small as this change is, it is sufficient to appreciably narrow the profile bearing contact. With hypoids, it is practical to cut the tooth bearing slightly heavier at the top and bottom than at the region of the pitch line and obtain an even weight of profile bearing after hardening. The lengthwise bearing can also be controlled and all bias bearing is eliminated. The same advantages of bearing control are obtainable in spiral bevels where the hypoid generator is used. The principal advantages of hypoids are silent operation and strength. Spiral bevels have long met the production demand for reasonably silent meshing and where desired, they can be made to function without any appreciable noise.

"In production quantities, where the variation of material, machinery, heat treatment and grinding must be contended with, the hypoid gear can be made more easily than the spiral bevel. Nearly all rear axle gears are lapped to obtain the initial smoothness which would normally occur in 500 miles of car operation. This lapping operation can be performed more easily and more surely on hypoids as a consequence of the endwise motion of the tooth surfaces. With spiral bevels, it is possible to spoil a pair by excessive lapping, which causes too great a confinement of the tooth action at the pitch line. With hypoids, the sliding motion is nearly uniform over the entire surface of the teeth and the lapping operation smooths equally the entire bearing surface of the teeth.

Strength of Hypoid Gears

"On the subject of the increased strengths of hypoids, it is interesting to note that no one has succeeded in breaking any to date. Some of these gears have been subjected to enormous loads; for instance, a 13 in. ring gear in a truck bearing a 9-ton load, another 13 in. in a bus weighing 7½ tons, where both jobs were subjected to severe abuse.

"The increased strength, of course, is due to the decreased spiral angle of the gear and the enlarged pinion. The reduction of spiral angle on the gear results in a decreased normal tooth load for a given transmitted load. The enlarged pinion diameter is of great importance as it permits the use of larger pinion shanks than on spiral bevels intended for the same use. The added stiffness and less deflection of the pinion shaft has a decided effect, as it prevents concentration of tooth load and permits the use of a longer tooth bearing.

"In general, the loads imposed by hypoid gears on the bearings are no greater than with spiral bevels of the same ring gear diameter. There is, however, a redistribution of the loads and direction of loading. Precise information should, therefore, be obtained from the bearing manufacturer.

"Whenever a new mounting is being designed, either spiral bevels or hypoids, careful consideration should be given to improving the gear mounting and reducing the deflection of the pinion. Experience has proved that the gear is not held rigidly enough, in many cases, to prevent springing away from the pinion, although recognition of this weakness has been evidenced in some cases by providing a thrust seat at the rim of the gear opposite the point of mesh. This scheme is faulty in that the amount of deflection allowed depends upon the judgment or care of the assembler. Adoption of the webless type of gear with suitable ribbing on the differential case and sufficient spread of the differential bearings will provide a gear mounting that is stiff. The extra cost is little if any more than the conventional type as is evidenced by the steady and rapid gain in this type of gear mounting.

"The distance between bearings on the pinion shank where an overhung mounting is used is important. The amount of overhang of the pinion, that is, the distance from the center of load application on the teeth to the centre line of the supporting bearing directly behind the teeth, should not be greater than 1/3 of the distance between the center of the bearings on the pinion shaft. Due to the pinion being above or below the center of the gear, the overhang of the hypoid

pinion is greater than with the spiral bevel. Therefore the spacing of supporting bearings that is correct for spiral bevels will not be sufficient for hypoid installation.

"Hypoid gears are intended primarily for installation in the automobile field, where the larger production will warrant the initial development work. This development at present is too great an item for economical manufacture of small quantities; such as would be called for in the ordinary mechanical field."

At the third general session, C. E. Stuart, president of the Central Alloy Steel Company, made an address of a patriotic tenor on "America—the Keeper of the Keys." S. O. White, chairman of the Transmission Committee, made a report dealing with the nomenclature of transmission parts, which was adopted, and as chairman of the Differential Committee he read a report recommending the adoption of a bell housing for transmissions for unit power plants. Both of these are identical, or substantially so, with S. A. E. Recommended Practices relating to the same subjects and were adopted.

The Library Committee, which at the last meeting was instructed to arrange with a clipping bureau for a service involving the furnishing of a bibliography on gear subjects to the membership, showed samples of the sheets which have been prepared and sent out A. F. Cooke of the Herringbone Gear Committee read a report recommending a revision of the Recommended Practice for Herringbone Gears adopted in April, 1923. The revision consisted in changing the factors in the horsepower formula, being based on the assumption that in herringbone gears the tooth load is carried at the pitch line, instead of at the outer point, as assumed by Lewis. The report was adopted.

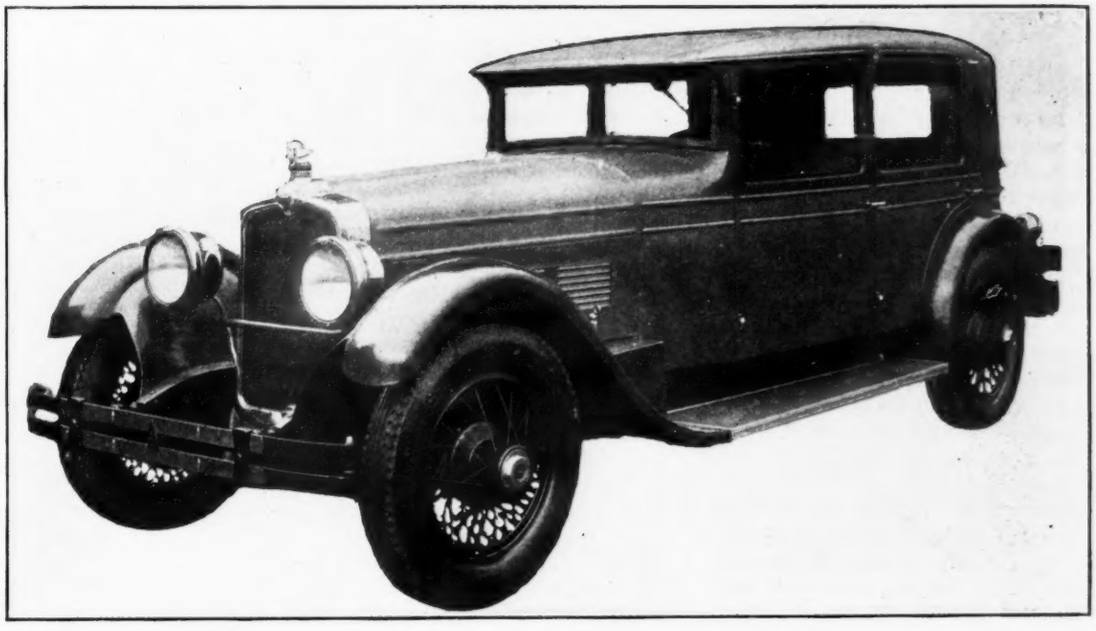
At the fourth and final general session two technical papers were read, one by Earle Buckingham of the Massachusetts Institute of Technology on the gear tests made on the Lewis machine and the other by George M. Bartlett of the Diamond Chain & Mfg. Co., on "Recent Developments in High Speed Chain Drives." The report by Major Buckingham covered substantially the same points as those taken up in a recent paper by the same author read at the A. S. M. E. meeting on the occasion of the New Haven machine tool exhibition and which was abstracted in *Automotive Industries.*

D. T. Hamilton, chairman of the Nomenclature Committee, presented a report containing a system of symbols for spur gear parts or elements based on the principles which have been explained in these columns in connection with former meetings of the A. G. M. A. This was adopted and the committee now hopes to proceed with the rest of its program, which includes definitions of terms, mathematical formula for elements that can be expressed in mathematical terms, and a drawing of the element. These four items will be combined on a single chart with four columns and one chart will be prepared for each type of gearing.

The next meeting of the Association, which will be its tenth annual meeting, will be held in Jackson, Mich., the home town of President Frost.

THE new Eastman No. 7 concealed door check, placed on the market a short time ago by the Concealed Check Co., Inc., of Kokomo, Ind., has now been adopted by an important automobile manufacturer using steel bodies. In this new door check strong cords are closely woven around a steel spring in the center of the device and are "welded" together by a heavy vulcanized casing of rubber. The spring serves to stiffen the check and to hold it in alignment. The cords will support a dead weight of 800 lb. and are said to be very durable.

Stutz With Weymann Fabric Leather Body



HERE is a Stutz car equipped with a Weymann fabric leather body. The photograph was taken in France just before the car was shipped to the United States. Bodies of this type are to be standard on one of the Stutz models.

Hoover Urges Uniform State Laws to Curb Motor Accidents

Tells National Conference on Street and Highway Safety that educational campaign should be followed by action to obtain adoption of uniform laws by States. Fatalities high this year.

By H. L. Cobb

DESPITE the work that has already been done by the National Conference on Street and Highway Safety, together with other agencies and associations, there has been no decline in accidents and deaths due to automobiles during the past year; on the contrary there has been a steady increase.

Such is the more or less disappointing picture that Secretary Hoover laid before the Street and Highway Safety Conference which held a joint meeting in Washington last week, on the call of the Secretary to devise further ways and means of diminishing the automobile death toll of the country and survey the activities organized in the various states to promote and adopt the conclusions and recommendations of the second conference.

Secretary Hoover, in opening the meeting stressed the need for continued efforts and activities of the conference members and announced that the first step of the activities, which was one of education, should be followed by State legislation to bring about uniform adoption and execution of the safety projects sponsored by the conference.

Fatalities Increase

Statistics presented to the conferees by William M. Steuart, Director of the Census Bureau, showed that in 1906, the first year for which figures were compiled, there were 304 deaths resulting from automobile accidents throughout the country, while in 1925 there were more than 20,000 and that for the year 1926 this figure would be materially increased. The total number of deaths from 1906 to January 1, this year, aggregate 160,000, the Director told the conference.

The brightest spot in the conference was the report of the Education committee showing that efforts to diminish the number of automobile fatalities among school children have met with a considerable degree of success. Notable decreases in accident mortalities among children were said to have resulted from community cooperation with the plans of the conference and these results were declared to promise well for a continued and more widespread diminution of children's deaths if the cooperation continued.

The report of the Committee on Designs, Construction and Maintenance of Motor Vehicles reported five phases of progress towards safety by the automobile manufacturers. They were enumerated as follows:

1. There has been a great improvement by the manufacturers in bettering visibility for the driver.
2. There have been marked improvements in design, with a view to greater operative safety, location of foot brakes in relation to the acceleration, the location of brake control and accessibility of brake mechanism for convenience of the owner's adjustment.
3. Progress in the construction of steering apparatus has been manifest in the improvement in operation and durability from a safety standpoint.
4. Automotive engineers have made great progress in the designs of headlights which will provide adequate operating lights with non-glare qualities and providing greater permanence of adjustment.
5. The improvement in driver's comfort, through engineering design, has improved riding qualities and has already reduced driver fatigue, thus contributing largely to safety.

Coupled with the report of the committee were four major recommendations, as follows: (1) Wider adoption by the automobile manufacturers of all improved safety features as rapidly as developed by the engineers; (2) Regular and consistent enforcement of existing laws and regulations with particular reference to headlights, brakes and driver vision; (3) Adoption of uniform laws covering the approved regulation of automotive traffic as incorporated in the uniform vehicle code recommended by the Second National Conference on Street and Highway safety, March, 1926, and (4) Education of the public to the necessity of the incorporation of these safety features of design in the vehicles they drive.

Representative Men Attend

The report was signed by Adrian Hughes, chairman, who is superintendent of bus transportation, United Railways; George E. A. Hallett, of General Motors and representing the National Automobile Chamber of Commerce; C. E. Pettibone, representing the National Safety Council of Boston, and A. B. Cumner, director of maintenance, Yellow Truck and Coach Manufacturing Co., New York City.

Representatives of the automotive industry, in addition to those named above, who attended the conference, included the following: Fred H. Caley, secretary, Cleveland Automobile Club; Frank E. Jack, vice-president, Chicago Motor Club; Kane S. Greene, president, Automobile Club of Philadelphia; Benjamin Eynon, motor vehicle commission of Pennsylvania; D. C. Fenner, chairman, Motor Vehicle Conference Committee, New York City, and S. R. Heller, John J. Boobar, and E. S. Higgins, all of the Yellow Cab Co.

Stewart Adds a New Six-Cylinder Truck Model of 3½ to 4 Ton Capacity

MODEL 22, a six-cylinder, 3½ to 4-ton capacity motor truck, is the latest addition to the line manufactured by Stewart Motor Corp., Buffalo, N. Y. The new job has a wheel base of 165 in. and lists for $4200.

A Lycoming bus type engine is used, 3⅞ by 5 in., with full pressure feed lubrication, 3 point suspension, 2¾ in. crank shaft carried on four bronze backed bearings, developing 70 hp. on block.

Remy ignition, generator and starter, Zenith carburetor, Alemite gascolator, Timken worm type rear axle, Ross steering gear, are all standard. The clutch is a 14-plate dry type. Case-hardened nickel steel gears are employed in the heavy duty transmission, furnishing four forward speeds and reverse. The drive shaft is tubular, 2¼ in. diameter equipped with three joints.

Specification Details

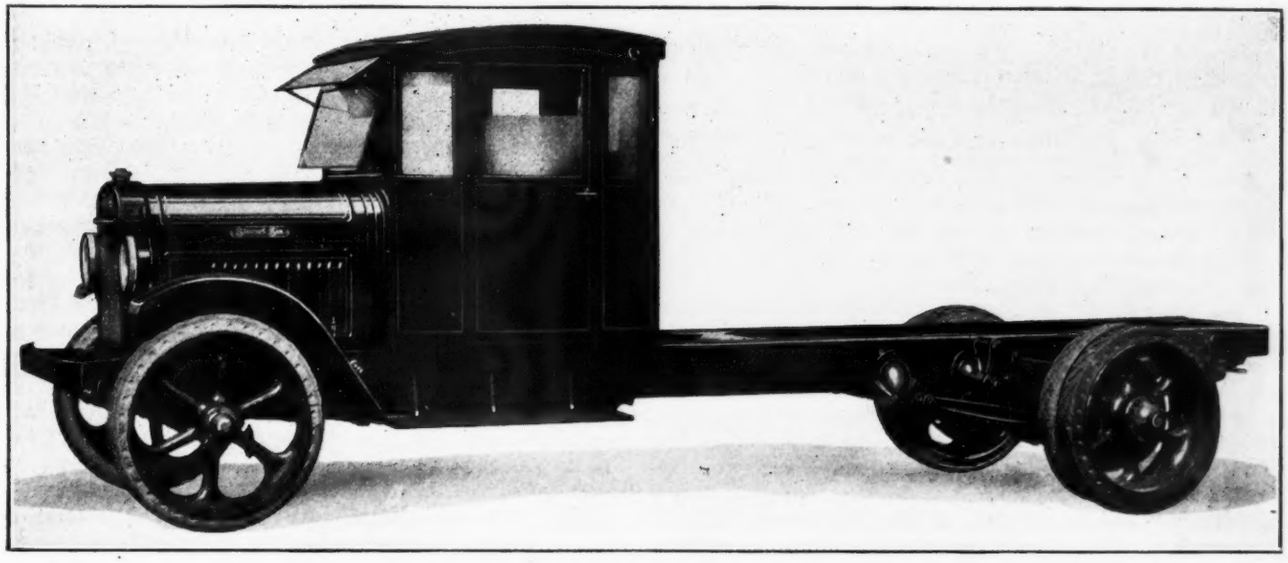
The gear ratio of the rear axle is 10.3 standard and 9.5 special. The Timken "I" beam type front axle has ball thrust bearings on the king pins to make for easy steering. A 60-in. tread insures a short turning radius. The front springs are 40 in. by 3 in. while the rear ones are 56 in. by 4 in.

Nine inch deep side rails are employed and are constructed of high carbon, heat treated steel. Service brakes are 3¾ in. wide, 21 in. diameter, working internally on rear wheel drums. Hand brake is mounted on transmission. Cast steel hollow spoke wheels are fitted with cushion solid tires although pnuematics will be furnished if desired at extra cost.

Standard equipment includes electric horn, speedometer, front bumper, and instrument board fitted with ammeter, oil gage, starting choke, lighting and ignition switches.

AN electric flow meter has recently been developed by the Brown Instrument Company, Philadelphia, which is said to be so designed as to avoid the mechanical and electrical difficulties hitherto encountered in this type of metering instrument. Among the characteristics of this new meter are, readings independent of the value of the voltage impressed upon the electrical system; no make-and-break contacts at the manometer, indicator and recorder, but stationary, divided inductance coils are employed; in the meter body all electrical windings and connections are outside the pressure chamber.

The integrator is a mechanical device operated by an electrical clock which also drives the charts. A pen operated by action of the integrator mechanism makes a record at the outer edge of the chart each time the integrator mechanism increases the counter reading by one unit. The entire integrator mechanism with its recording pen is simple and compact and can be mounted in the standard recorder case, thus avoiding the necessity for a separate integrator case.



General View of new Stewart Motor Corp. truck chassis which is powered with a six-cylinder, 70 hp. Lycoming, bus type engine and has a carrying capacity of 3½ to 4 tons

Characteristics *of Roots Blower Studied in* Aeronautic Tests

Experiments conducted by N.A.C.A. result in favorable report on adaptability for supercharging of aircraft engines. Paper on subject is presented at S.A.E. meeting.

THE Roots blower has long been used for industrial purposes, but its application to the more exacting requirements of automotive work is of more recent date and its characteristics are by no means well known. For more than a year the Air Service has interested itself in the problem and an experimental blower was built for the National Advisory Committee for Aeronautics.

A paper based on experiments with this device was presented recently before the Dayton Section of the S. A. E. by Arthur W. Gardiner, associate aeronautical engineer of the N.A.C.A., and contained a good deal of interesting data on the properties of the device and its use for supercharging purposes.

The Roots blower apparently derives its name from the fact that blowers of this type have been built by the firm of P. H. & F. M. Roots Co. of Connersville, Ind., since 1859. A search of its history also revealed that such a blower was exhibited at the Paris World's Fair of 1867 by one Elihu Root.

Mr. Gardiner states that in industrial service Roots blowers are widely used where pressures of 8 oz. to 8 lb. p. sq. in. have to be worked against. For lower pressures centrifugal blowers are used, and for higher pressures, piston-type compressors. The general form of the Roots blower with its two "figure 8"-shaped rotors and a housing for same is well known. It is less well known, however, that the parts are so designed that in their rotation the two rotors do not touch each other nor the casing, clearance being maintained at all points to reduce friction. The two rotors are rotated in unison by having their shafts geared together.

Rate of Leakage

Since both rotors rotate in the housing with clearance, and also do not touch each other, it is obvious that leakage must occur, and the rate of leakage is one of the factors dealt with in the paper. The leakage is usually expressed, Mr. Gardiner says, in terms of the rotor speed required to maintain a certain pressure with no delivery, this being known as the slip speed. With the discharge opening of the blower shut off the slip speed will vary with the square root of the pressure difference between the intake and delivery sides. As the volume of air moved by a blower varies with the cube of its linear dimensions while the area of the leakage path varies only as the square of these dimensions and the length of the path moreover, increases also, the relative leakage naturally is smaller in large units. Thus with commercial blowers of 300 cu. ft. displacement per revolution, the slip speed at 1 lb. p. sq. in. pressure difference is usually only from 3 to 5 r. p. m., whereas with a blower of 0.75 cu. ft. displacement it is 65 r. p. m. If instead of the delivery opening the intake is closed, the slip speed will be greater.

The primary effect of slip is that the volumetric efficiency of the blower decreases with an increase in the pressure of discharge. Incidentally, as a result of the escape of compressed (and, therefore, heated) air to the intake side, the temperature of the discharged air will be raised.

Pressure and Volume

At a certain position of one of the rotors it encloses a definite volume of air at atmospheric or substantially atmospheric pressure in the space between itself and the housing. A moment later this space is opened to the discharge side, with the result that air previously compressed enters it and rapidly brings up the pressure within it to the discharge pressure. It is this pressure that the rotor has to work against during the next half of a revolution, and a pressure-volume card from one of the pump chambers is a rectangle whose length is proportional to the volume of displacement and whose height is proportional to the discharge pressure. The work per cycle depends upon the quantity of air delivered and the pressure difference against which it is delivered.

The rate of delivery is not uniform throughout the cycle but varies, and the fluctuations in delivery are the greater the higher the pressure worked against, which is more or less obvious from the fact that the maximum rate of delivery remains the same, but with higher pressures there is more back flow into the blower, whereby the minimum delivery is decreased. As a result of the non-uniform delivery, pressure pulsations are set up in the delivery line. There is also considerable variation in the power necessary to turn the rotors at different points of the cycle. The resistance encountered by each rotor evidently varies from almost nothing when the sides are exposed equally to the inlet and outlet, to the maximum 90 deg. farther on, but the torque curves of the two rotors are superposed and their resultant does not show such wide variations. In the case of the Air Service blower the torque of one rotor varied from 5 to 80 per cent of the mean total torque, and the torque of both rotors combined varied from 86 to 111 per cent of the mean.

Tests made on a small industrial blower at 1800 r.p.m. (about three times its normal speed) showed that there was no decrease in volumetric efficiency with speed—

in fact, there was even a "ramming" effect due to the inlet pipe—and that no trouble need be feared from pressure pulsations, as they could be prevented from building up by the use of an air receiver.

In designing a Roots blower type of supercharger for the twelve-cylinder Liberty engine, it was decided to run it at 1½ times crankshaft speed, so there would be six pulsations per crankshaft revolution from the supercharger, to correspond to the six induction strokes of the engine. The displacement was made such that at 2400 r.p.m. of the rotors the blower would maintain atmospheric pressure at the engine intake up to an altitude of 15,000 ft. This led to the following dimensions: Diameter of rotors, 9.5 in.; length, 11 in.; distance between axes, 5.833 in. Aluminum alloys and alloy steel were used as materials of construction and the weight of the blower is only 88 lb., which is about one-fourth that of an industrial blower of the same displacement.

Performance curves of this blower are shown in Figs. 1-5. The average clearance at all points in the compression chamber is 0.006 in. It will be seen that when the blower is not working against any pressure the volumetric efficiency decreases as the speed increases, but when working against a pressure the volumetric efficiency increases with the speed. The slip speed curve shown in Fig. 2 was obtained with the blower intake shut, and for purposes of comparison a curve is drawn in which is based on the observed slip speed at a pressure difference of 2 lb. p. sq. in. and the assumption that the slip speed varies as the spare root of the difference in pressure between intake and discharge. A curve very similar to this would be obtained if the test were made with the outlet shut.

Fig. 3 shows the relation between the temperature and pressure variations when the air is compressed. It is well known that in adiabatic compression

$$\frac{T_1}{T} = \left(\frac{P_1}{P}\right)^{\frac{\gamma-1}{\gamma}}$$

where T and P are the initial temperature and pressure and T_1 and P_1 the temperature and pressure after compression, and γ is the ratio of specific heats, viz., 1.405. The effect of loss of heat through conduction and of leakage is to modify the value of γ, and whereas in the case of the pressure-volume relation it is lowered to about 1.3, in this case it is raised to 1.53. In the diagram are shown four curves, giving the pressure ratio-temperature ratio relation for adiabatic compression ($\gamma=1.4$), for the actual test with the Roots blower, for a polytropic compression with exponent $\gamma=1.53$ and for a test with a single stage centrifugal compressor. That the temperature of the air is increased less with the Roots than with a centrifugal compressor is a point in its favor.

Power Required for Drive

Since the Roots blower is a positive displacement machine its delivery in pounds of air is substantially proportional to the rotor speed, there being a slight deviation from a straight line relation at the lower end of the scale, on account of the slip. Since the volume of air compressed is proportional to the rotor speed, the power required to drive the blower is substantially proportional to the pressure worked against. Fig. 4 herewith shows the power consumed in compressing the air to different pressures and also the friction of the device for various rotor speeds. These curves are based on an inlet temperature of 59 deg. F. and an outlet or discharge pressure of 14.7 lb. p. sq. in. The curve marked "Friction" was obtained when running the blower with both the inlet and the discharge free.

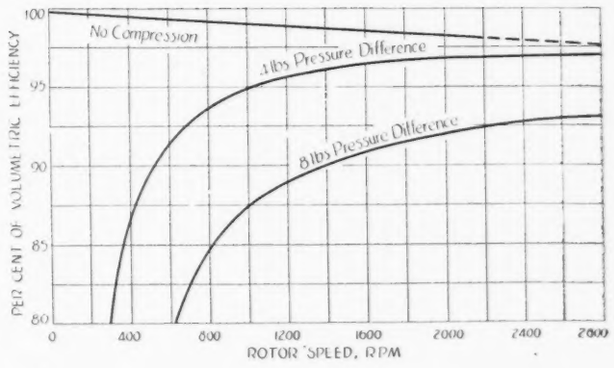


Fig. 1

In Fig. 5 are shown the adiabatic efficiencies at four different rotor speeds, plotted against the pressure difference. This chart shows that the efficiency decreases with an increase in speed. At the higher speeds the efficiency remains substantially constant over a considerable range in pressure difference, while at lower speeds this range is somewhat reduced.

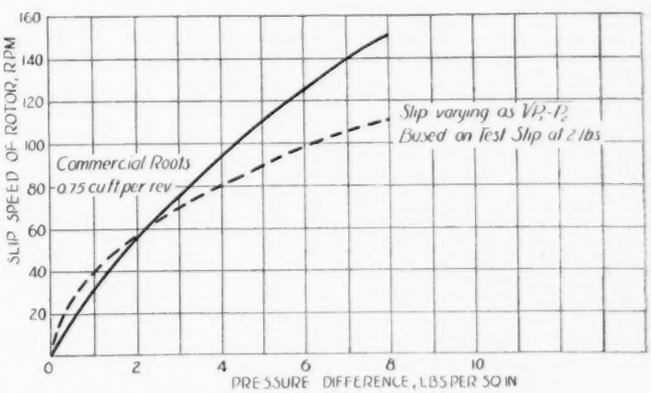

Slip varying as √P1-P2
Based on Test Slip at 2 lbs
Commercial Roots
0.75 cu ft per rev
SLIP SPEED OF ROTOR, RPM
PRESSURE DIFFERENCE, LBS PER SQ IN

Fig. 2

It has been pointed out already that leakage is a less important factor in blowers of large than in those of small dimensions, and the effect of an increase in dimensions on the volumetric efficiency was brought out by comparative tests on two blowers with rotors of the same diameter and 8¼ and 11 inches long, respectively. The volumetric efficiency was materially higher in the case of the blower with the longer rotor. When working in free air the volumetric efficiency of the long

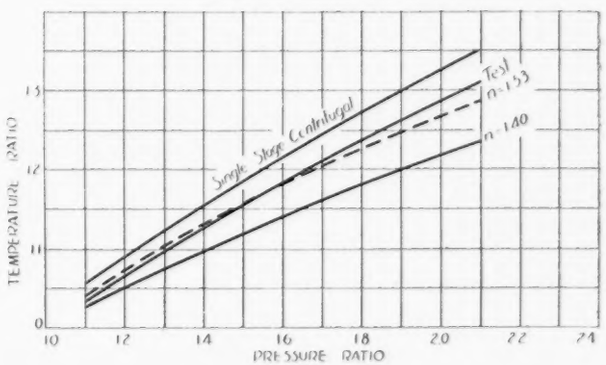


Fig. 3

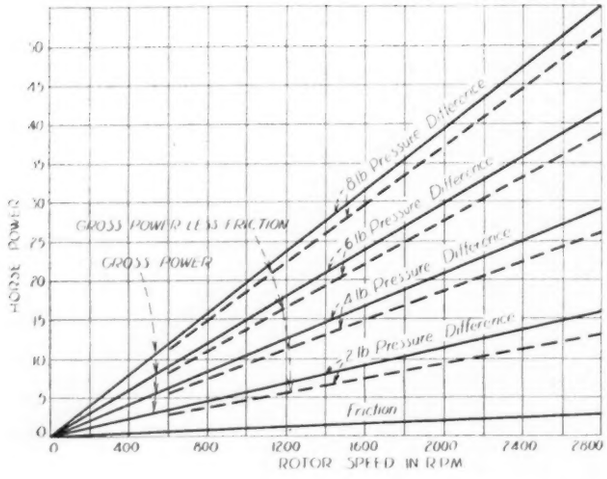


Fig. 4

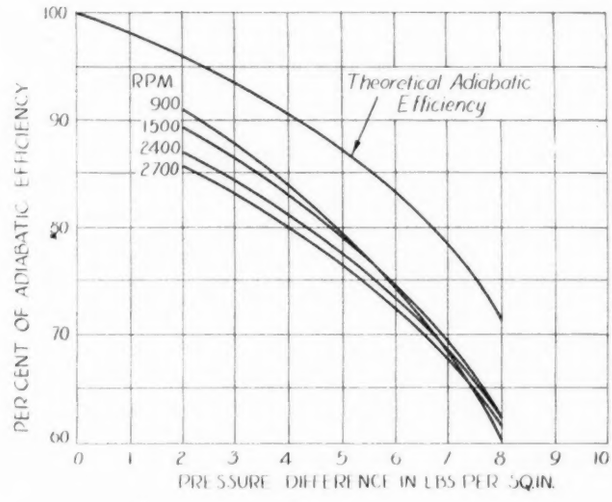


Fig. 5

blower decreased from 100 per cent at no speed to 98 per cent at 2800 r.p.m., while that of the short blower decreased from 100 per cent to 95 per cent at 2800 r.p.m. and to 92 per cent at 5200 r.p.m. When working against pressure the volumetric efficiency is low at low speeds and increases up to a certain speed at which a maximum value is reached, which speed is lower for the long than for the short blower.

After discussing the subject of supercharge control so as to maintain substantially the same degree of charge up to the altitude to which it is desired to maintain the full engine power, and recording the results obtained with the blower described in flight tests, the author summarizes the points in favor of the Roots blower for use as an aircraft engine supercharger as follows:

1. It can be built in sizes and operated at speeds that make it adaptable for aeronautic use.
2. It has a high over-all efficiency, even in the smaller sizes.
3. Its characteristic discharge is not necessarily detrimental to good engine-performance.
4. Due to its rugged construction, its cost of maintenance is small and its reliability and durability are favorable, which favor the production of a supercharger that will not detract from the present high standards for the normal engine.
5. Supercharging with the Roots compressor is obtained with the minimum of distress for the engine.
6. The logical method of control, which is by by-passing, results in the minimum of power required by the supercharger at the lower altitudes, thus impairing the low-altitude performance of the airplane but little.
7. Due to this method of control, the engine can be operated as a normal engine by merely leaving the by-pass valve open, in which case the power required by the supercharger is only that required to overcome friction; the use of troublesome clutches and complicated change-over valves is thus obviated.
8. Also, due to this method of control, injury to the supercharger from back-firing is obviated, except for the case when the by-pass valve is closed above the critical altitude.
9. The temperature of the air supplied to the engine is the minimum at all altitudes when supercharging, and is practically atmospheric when not supercharging.
10. The temperature of the discharged air is lower, for the same compression, than for the centrifugal compressor.
11. Because of its comparative simplicity of construction, the initial cost is low.
12. Due to its relatively low speed of operation, the need for extreme care in balancing is obviated, air-friction losses are small, and the gear problem, introduced by conditions of rapid acceleration, is not serious.

New Norwegian Air Lines

THE newspapers of Oslo announce that a company for the exploitation of Norwegian air lines is in process of formation there. Captain Dokrod, who has taken the initiative in this enterprise, and who has the management of the new concern in his hands, gave the following information concerning it:

"The company is known as Norsk Aerotransport A. S. It is the plan to interest Norwegians in commercial air transport. It is of importance that when the proper time comes we should be ready to establish aerial relations with foreign countries.

"For Norway the future air service between this country and Great Britain is of most interest. It will undoubtedly have Oslo as the starting point, with stops at Christiansand and branch-offs to Bergen, Stavanger, etc. Oslo will also be the starting point for a line to Trondhejm and the North.

"This service will naturally be extended to the East, by commencing with Stockholm. Efforts are being made in Sweden to have it pass by way of Gothenburg, and the Danes want to connect it to Copenhagen; it is therefore necessary that Norway make haste.

"The second service of interest is what is known as the Continental line. There is already one such line, a very good one, moreover, which passes through Malmo. The train leaving Oslo in the evening arrives at Malmo the next morning, so that it is possible to reach on that day almost any of the principal capitals of Europe. At the present time this method of travel yields the highest speed possible in the present state of development of aircraft. For if a line were to be established from Oslo to Paris, in order that the destination might be reached on the same day, it would be necessary to start at 4 A. M., which is much too early.

"In the field of foreign connections our efforts for the present, therefore, will be limited to assuring for Norway a place in the network of air lines to be established, leaving to the great powers the task of extending it and of improving the material."

EDITORIAL

Harry H. Bassett

THE death of Harry H. Bassett has taken from the automotive industry one of its best liked leaders. He died at the zenith of a splendid business career and his position will be a big one to fill. Harry Bassett was of the school of men who rose from the ranks because he could vision a great future for the automobile and it was his vision, his personality, his ability for handling men, and his capability for work that made it possible for him to lead the Buick Motor Co. into the position of prominence which it holds in the automotive world.

Worker that he was, he also found time for his family and friends and for recreation. He didn't believe in mixing work and play, but he was the type who liked to play as diligently as he worked. He was a man of action and surrounded himself with a staff which knew how to work and to it he always assigned a large share of the credit for the accomplishments of his company.

He was vitally interested in the future of Flint and took an active part in the development of the city.

The automobile industry is the better for Harry Bassett's association with it. His accomplishments will serve as a splendid example for others to follow. His name will go down in history as one of the outstanding executives of his day.

Analyzing the Price Changes

FOR nearly a year now there has been no major price trend movement in the automobile industry. Price changes have been frequent during the last twelve months, but at no time has there been a large number of revisions coming at the same time and tending in exactly the same direction. Whatever tendency has been exhibited has been downward.

Talk of general price reductions has filtered through the industry from time to time, but no actual developments have borne out the rumors; and there is little to indicate that any marked downward trend is to be expected in the near future.

Most recent price changes seem to have been merely a continuance of the readjustment in prices in accordance with the shifting trend of demand between open and closed jobs. While the number of prices increases in passenger cars has been just about equal to the number of decreases in recent months, a majority of the cuts have been on closed jobs and a majority of the increases on open.

Between July 1 and October 9, for example, prices were changed on 91 passenger car models. Of these changes, 48—or 52.8 per cent—were price cuts, while 43—or 47.2 per cent—were price increases. The revisions included 36 open models and 55 closed.

Of the changes on the open cars, 64 per cent were increases, while only 36 per cent were declines. In the case of the closed jobs, however, the situation was almost exactly reversed—prices were cut in 63.6 per cent of the cases and increased in only 36.3 per cent.

Recent price changes thus appear merely to be of the same general character as those which have been made for nearly a year past.

Piston Speed

IN the announcements of new models brought out for the Paris and London shows, one is able to read between the lines—if it is not definitely stated—that the former tendency toward higher and higher piston speeds, and consequent increased output per unit of piston displacement, has run its course, and that a retrograde movement has actually set in. European motorists during the past few years have become familiar with the operating characteristics of American cars, the greater flexibility of their engines and the ability of these engines to give high torque at low speed. These qualities naturally appeal as much to the European as to the American operator. The result seems to have been a change in the demand.

One prominent French manufacturer who has been specializing on a 5 hp. car has recently come out with a 10 hp. model and has practically abandoned the smaller design. Another states that, in view of the class of people now buying automobiles, he has not aimed at maximum engine speed but has preferred to provide somewhat greater piston displacement.

In England regret has been expressed at the direction in which engine design has been forced by the fiscal policy. The high tax, proportional to the square of the cylinder bore, has led to the development of small-bore, long-stroke, high-speed engines which, while they may be justified in England in view of the high tax and the exceptionally good condition of the roads, are not the type that will give the best satisfaction in the colonies, and this, in part at least, accounts for the fact that Great Britain is furnishing only a small part of the automobiles imported by her colonies.

Getting the greatest possible output from a cylinder of given displacement is a problem that naturally appeals to the designer, but if the engine is so proportioned that it must work near full load most of the time, this results in a delicate powerplant that lacks both reliability and flexibility.

AUTOMOTIVE NEWS SECTION INDUSTRIES

Philadelphia, Pennsylvania

Thursday, October 21, 1926

Lower Schedules Effective as Buying Tends Downward

PHILADELPHIA, Oct. 21—Curtailment is in progress at the automobile factories. The downward trend is a natural reaction after the record high level of August and September operations and is the prelude to the slack season in sales now beginning. As yet there is no evidence that the recession is more than normal.

The sales market is spotty, with manufacturing sections buying better than agricultural districts, and the northern states more heavily interested in new cars than the southern, as might be expected from the impairment to purchasing power inherent in the collapse in cotton prices.

The utmost conservatism is being exercised in production programs. More than ever the most successful factories are determined to avoid overproduction and consequent piling up of inventories and burden on the retail end. On the basis of present policies even a drastic recession could be accomplished in an orderly manner.

On the whole, however, there is a pretty general feeling that the winter market will be of average strength, and that a fair rate of output will be possible for the next three months. An element of strength for most of the big producers is that the stocks of their dealers are in excellent condition. Additions to cars on hand have been made in the last six weeks, but not to an unsound extent.

The manufacturers were never more active in the effort to better the capacity for profitable business of their dealers. The current period of lower manufacturing and sales operations is being used to push used car merchandising plans, policies for retaining and increasing parts and accessory sales by dealers, and for the improvement of shop practice. Better servicing by dealers is increasingly recognized as a vital factor in building good will for a motor car.

Hupp Sets Four Records in September Operations

DETROIT, Oct. 18—September saw the establishment of four new records by the Hupp Motor Car Corp. In finishing shipments for the month the corporation had, in less than nine months, exceeded the best previous entire year's production, 1925, in number of cars produced and sold. The month was also the largest in the company's history and was the twelfth consecutive month in which both factory shipments and retail shipments have exceeded those for the corresponding period a year ago.

On Oct. 1 the company had nearly $2,000,000 in unfilled orders.

Salon to Disclose New Body Designs

NEW YORK, Oct. 21—Six nations exhibiting more than 100 individual cars with specially designed custom built bodies will participate in the 22nd annual New York Automobile Salon opening Nov. 28 at the Hotel Commodore.

This year's Salon will be the largest exhibit of de luxe motor cars ever held. France, Italy, Belgium, England, Germany and the United States are represented. Cars being exhibited are: Cunningham, Isotta-Fraschini, Mercedes, Minerva, Panhard, Renault and Rolls-Royce. Cars to be shown by coachmakers are: Cadillac, Duesenberg, Franklin, Hispano-Suiza, Imperial Chrysler, Lincoln, Marmon, Packard, Pierce-Arrow and Stutz. Special custom coachwork exhibits will be made by Brewster, Brunn, de Causse, Derham, Dietrich, Fisher, Fleetwood, Holbrook, Hume, Judkins, Le Baron, Locke, Rollston, Weyman and Willoughby.

The Salon will be duplicated in Chicago on Jan. 29 and in Los Angeles on Feb. 12.

Two Deluxe Models for Pontiac Line

PONTIAC, Oct. 21—Two deluxe models, featured by having the fenders, splashes and headlights finished in the same shade of Duco as employed on the body, were added to the Pontiac line this week by the Oakland Motor Car Co.

These two models, a deluxe coupe and a deluxe landau sedan, listing at $895 and $975, respectively, embody also specially appointed interiors.

These two cars represent an increase of $70 and $80 respectively over the corresponding models of the regular line.

Special, deep cushioned springs with mohair covering are used for the upholstery. Additional touches of distinction are imparted by walnut finished windows and garnished mouldings which harmonize with the new 17 in. walnut steering wheel. The instrument panel is finished in Duco to match the exterior of the car while the hardware is of special period design.

Other items of equipment are the same as those on the regular coupe and landau sedans.

SEPTEMBER CAR AND TRUCK OUTPUT 413,119

NEW YORK, Oct. 21—September production of cars and trucks in the United States and Canada was 413,119 cars and trucks, according to U. S. Department of Commerce report and figures released in Canada. The U. S. and Canada car and truck output for nine months is 3,675,692, as against 3,184,129 in 1925.

The U. S. car figure for September was 350,811 and the truck output 46,312. Canadian output was 12,444 passenger cars and 3552 trucks.

Dodge Net $17,979,784 in First 9 Months

NEW YORK, Oct. 21—Dodge Brothers, Inc., net income for the first nine months of this year totaled $17,979,784, after all charges, the corporation reported in its third quarter statement. Allowing for preferred dividends, this is equivalent to $5.58 a share on the 2,435,024 shares of class A and B common stock. Income was $23,043,445 after depreciation but before interest and Federal taxes.

Third quarter income was $7,242,081 after depreciation but before interest and Federal taxes, comparing with an income of $8,872,115 for the 1925 third quarter.

As of Sept. 30, cash in bank was $24,545,769; inventories, $16,052,591; total current assets, $59,597,553 and current liabilities, $22,002,837. Sales for the first nine months of this year were reported as 293,842 cars, trucks and buses, a gain over the same period last year when sales totaled 207,601.

Peerless Increases Net

NEW YORK, Oct. 21—A net income of $239,191 after depreciation and Federal taxes is reported for the quarter ended Sept. 30 by the Peerless Motor Car Corp., equivalent to 92 cents a share on 258,589 shares of stock. This compares with $694,336, or $2.68 a share in the second quarter and $211,737, or 92 cents a share in the third quarter of last year.

Net income for the first nine months amounted to $1,139,330 after charges, equal to $4.40 a share. Net income for all of 1925 was $126,804.

See Bus Regulation Outcome of Hearings

Evidence Before I.C.C. Shows Passenger Vehicle Meeting Most Railway Opposition

WASHINGTON, Oct. 21—A prediction that the Interstate Commerce Commission will recommend to Congress Federal control of interstate bus traffic is made here as final plans are being drawn to conclude the last of a series of thirteen hearings on the question by the Interstate Commerce examiners. The concluding hearing will begin on Oct. 25 and will last two days.

The legislative committee of the bus division of the American Automobile Association called a meeting today and will spend the remainder of this week drafting a bill which it will include in its brief before the Commission, to be filed on Monday, and which will embody the A. A. A.'s idea of what should be embodied in the interstate regulations.

Similar meetings are being held here this week by the American Railway Association, meeting on Saturday; the American Farm Bureau Federation and the National Grange meeting on Friday.

"As a result of the hearings which already have been held, all indications point to the belief that Federal regulation of bus transportation is certain, the only uncertain element being that of interstate truck traffic," according to S. A. Markel, chairman of the Legislative Committee of the A. A. A. bus division, who predicates his declaration on testimony offered during the previous hearings.

The American Automobile Association's bill is being drafted by a committee composed of Mr. Markel, Ralph W. Sanborn, of Cleveland, representing the Ohio Motor Bus Association; Arthur M. Hill, Chairman of Bus Board of the A. A. A. and President of the West Virginia Motor Bus Association; Sterling G. McNees, representing the Pennsylvania Motor Bus Association and George P. McCallum, representing the Michigan Motor Bus Association.

"Wild Cat" Competition Charged

In a brief filed with the Interstate Commerce Commission today by the Erie Railroad and its subsidiary lines, an appeal was strongly urged by the railroad to place all interstate bus traffic under Federal regulations. The charge was made that the buses get a large proportion of the occasional full fare passengers and that the absence of regulations permit a "wild cat" irresponsible form of competition.

Erie officials said the problem with respect to buses is different from that with respect to trucks. Regardless of what may be done with respect to the latter, there is no reason why the usual sort of regulation should not be applied to passenger bus lines, it was asserted.

The New York, New Haven & Hartford, in a brief also filed this week, declared it is desirable to confine Federal legislation to the regulation of motor buses engaged in passenger transportation and that such regulation should be local as far as possible.

A third brief was filed by the American Electric Railway Association calling attention to the fact that in many instances, as many as five bus lines are performing the same service in the same territory over public highways where there is ample rail transportation. These buses, it was maintained, operate over improved highways largely paid for by the taxes inflicted upon the railroads.

A.A.A. Contest Board Assumes New Work

WASHINGTON, Oct. 14—At the first meeting of the reorganized Contest Board of the American Automobile Association held here today, it was decided that the board, in addition to supervising contests and speedways, should lend its influence to stimulating technical tests of components of motor vehicles, accessories, etc.

Where such technical tests would call for laboratory work it is planned to make arrangements either with Government laboratories or those in universities. The board will appoint engineers to supervise such tests and issue certificates of performance.

The new Contest Board has for the first time representatives of the drivers and speedways on it. T. E. Myers, manager Indianapolis Motor Speedway, and Coleman W. Roberts, manager of the Charlotte Speedway, represent the speedways. Thomas L. Milton represents the racing drivers. The engineering fraternity is represented by T. J. Litle, Jr., president of the Society of Automotive Engineers. Other representatives on the board are David Beecroft, F. A. Crosselmire, Samuel E. Hibben, E. V. Rickenbacker, Horace Murphy and Ray W. Sherman.

A committee was appointed to revise the contest rules.

Form Anderson Laboratory

CINCINNATI, Oct. 20—Robert J. Anderson, Inc., has been formed here to operate as a commercial testing laboratory specializing in metals and alloys. The staff is composed of expert chemists and metallurgists under the direction of Dr. R. J. Anderson, who is president of the company. Other officers are H. J. Hater, treasurer and R. T. Mesker, secretary. The officers with John and E. F. Eckerle form the incorporators and directors.

Timken Officials Change

CANTON, OHIO, Oct. 25—E. N. Beisheim, formerly of the Bock Bearing Co., has been named assistant to the general manager of the Timken Roller Bearing Service & Sales Co. S. C. Partridge has been placed in charge of the Buffalo office, industrial division, succeeding Lee Warrender, resigned.

Business in Brief

Written exclusively for* AUTOMOTIVE INDUSTRIES *by the Guaranty Trust Co., second largest bank in America.

NEW YORK, Oct. 21—Bad weather and low cotton prices continued to restrict the volume of trade last week. There has been some improvement, however, in both these factors. Cotton prices have advanced some $3.50 a bale from the low point, while the advent of cooler weather promises to stimulate business in seasonal lines. Stock prices continued to decline last week, while commodity prices in general moved upward.

FREIGHT LOADINGS

Railway freight loadings in the week ended Oct. 2 numbered 1,185,524 cars, only 1487 below the high record established in the week ended Sept. 18. Freight traffic handled by the railroads in the first eight months of this year amounted to 312,528,590,000 net ton-miles, which is 7 per cent larger than the total for the corresponding period last year and 2.7 per cent above the previous record set in 1923.

COTTON CONSUMPTION

Cotton consumed by domestic mills last month amounted to 571,105 bales, excluding linters. This compares with a consumption of 500,652 bales in August and 483,082 bales in September last year.

PETROLEUM

A further gain in crude petroleum production occurred in the week ended October 9, when the average output was 2,204,200 bbl. a day, as against 2,194,250 bbl. in the preceding week and 2,094,800 bbl. in the corresponding period last year. Crude oil prices remained firm last week.

BANK DEBITS

Bank debits to individual accounts reported to the Federal Reserve Board for the week ended Oct. 13 (a holiday week) were 20.7 per cent below the total for the preceding week but 5.5 per cent above that of a year ago.

FISHER'S INDEX

Fisher's index of wholesale commodity prices stood at 148.1 last week, as against 147.4 a week earlier and 148.3 four weeks earlier.

FEDERAL RESERVE STATEMENT

Bills and securities held by the Federal Reserve Banks increased $100,200,000 during the week ended Oct. 13, discounts rising $80,300,000, open market purchases $18,1000,000 and holdings of Government securities $1,800,000. Note circulation increased $25,300,000, deposits $14,400,000 and reserves $3,200,000. The reserve ratio declined from 73.7 to 73.1 per cent.

During the same period, loans of reporting member banks declined $7,000,000 and investments $14,000,000, while borrowings from the Federal Reserve Banks increased $79,000,000.

Studebaker Revises Prices Through Line

Reductions Are Made on Three Models With Increases on 12 Others

NEW YORK, Oct. 18—Price reductions of $200 on the Big 6 custom brougham, $170 on the Big 6 club coupe and $45 on the Standard 6 sport roadster, together with a general increase of $35 in the prices of other models have been announced here today by the Studebaker Corp. of America. Following is a list of the models affected, together with their new and former prices:

Model	New Price	Old Price	Changes
Standard 6			
Duplex Roadster	$1160	$1125	+ $35
Sport Roadster	1250	1295	— 45
Duplex Phaeton	1180	1145	+ 35
Coach	1230	1195	+ 35
Sedan	1330	1295	+ 35
Special 6			
Sport Roadster	$1630	$1595	+ $35
Duplex Phaeton	1480	1445	+ 35
Brougham	1830	1795	+ 35
Coach	1480	1445	+ 35
Big 6 120" wheelbase			
Duplex Roadster	$1530	$1495	+ $35
Sport Roadster	1680	1645	+ 35
Sport Phaeton	1610	1575	+ 35
Club Coupe	1480	1650	— 170
Sedan	1930	1895	+ 35
Custom Brougham	1785	1985	— 200
Big 6 127" wheelbase			
Duplex Phaeton	$1810	$1775	+ $35
Brougham	2130	2095	+ 35

Coincidently with these price changes, a five-passenger custom victoria has been added to the Big "6" 120 in. wheelbase chassis, listing at $1735. A folding seat is provided for the front passenger and a bucket type seat for the driver. This model is finished in Croatan green lacquer with ivory belting, while upholstery is chase mohair broadlace trimmed. Standard equipment includes front and rear bumpers, automatic windshield wiper, rear vision mirror, hydraulic gasoline gage, engine heat indicator, coincidental lock, toggle grips and disk wheels. As on other Studebaker Big 6 models, the custom victoria is equipped with 4 wheel brakes, an air purifier and an oil filter.

Mulch Says Durant Will Expand Coast Facilities

SEATTLE, Oct. 16—R. H. Mulch, vice-president of the Durant Motors Co. of California, was in Seattle this week on a one-day survey of business conditions here. Mr. Mulch is making a general observation trip throughout the northwest territory and is including Spokane, Portland and Boise in his list of cities visited. Later he will include the larger cities of California.

"General growth and strengthening of business conditions is apparent in virtually every city of the Pacific Coast," Mr. Mulch stated. "The Durant company is doing its share in promoting greater coast industry," he added, pointing out that within 60 days, one of the greatest enlargement programs ever adopted by the factory at Oakland will be executed.

Approximately 10,000 motor cars were manufactured and sold by the Durant interests, including Star, during August. This figure, according to Mr. Mulch, is 32 per cent in excess of July.

Republic Builds Truck Designed by Distributor

SPOKANE, Oct. 19—Announcement of the election of George H. Peery as secretary-treasurer of Nelson Motor Co., Inc., here and of arrangements for the placing in production at the Republic Motor Truck Co., Inc., factory in Alma, Mich., of the six-wheel truck developed by the Nelson company, was made here following a meeting of Nelson stockholders.

E. O. Nelson, vice-president and manager, recently made a trip to the Republic factory at which time he made tentative arrangements for manufacture of the truck. The truck is especially adapted to work in logging camps and other places where obstructions are likely to be met on roads and its special features are an interlocking differential between the two pairs of rear drive wheels and a special spring suspension. It was designed by E. O. and A. W. Nelson and developed by their firm, which distributes Republic trucks in this territory, primarily for heavy logging duty.

Mr. Peery is the direct factory representative of the Republic company here and he will retain this connection. He was the first treasurer of the Republic company and nine years ago put in and operated the Los Angeles plant.

New Fisher Flint Plant Will Start Work Nov. 1

FLINT, Oct. 16—R. J. Whiting, who has been appointed factory manager of the Fisher Body Corp.'s new plant here, states that production of Buick closed bodies will begin about Nov. 1.

At the start the corporation expects to employ about 150 men and to make 50 bodies a day. This will gradually be increased as new equipment is installed, bringing the eventual output up to 1200 a day and the factory will employ 8000 to 10,000 men.

Mr. Whiting is well known as a production engineer in the body building business. He installed the progressive conveyor systems used in Fisher plants throughout the United States, and his experience with the corporation especially fits him for his job of transforming the large Flint factory.

Moon Roadster $1195

ST. LOUIS, Oct. 20—The Moon Motor Car Co. states that the Moon Six-Sixty cabriolet roadster is priced at $1195 f. o. b. St. Louis, and not $1145 as previously announced.

Hudson Cuts Prices and Adds New Coach

Reductions of $100 Made on Regular Models—Special Coach is $1150

DETROIT, Oct. 15—All Hudson and Essex models have been reduced in price $100 effective today, it is announced by the Hudson Motor Car Co. With this reduction a new model known as the Hudson Coach Special is introduced which lists at $1150, $55 more than the standard coach. Bullet type headlights and new upholstery and trim are special features of the new model.

The new prices, f. o. b. Detroit for the entire line are Essex coach $695; Hudson coach, $1095; Hudson coach special, $1150; Hudson brougham, $1395, and Hudson 7-pass. sedan, $1495.

Parts Merchandising Topic at N. Y. Meeting

NEW YORK, Oct. 16—A discussion of stock control systems, perpetual inventories, physical inventories and merchandising of replacement parts featured the regular meeting here this week of the Automotive Service Association of New York.

A. Benhoff, general parts manager of Willys-Overland, Inc., Toledo, Ohio, outlined a system of controlling inventory, back orders and deliveries. He spoke on the topic "Handling and Merchandising of Replacement Parts by Automotive Distributors." At the conclusion of his speech, he offered to supply samples of forms used in the system to anyone in the industry who might be interested.

"System, service and sales," he said, "comprise the three essential elements in the successful handling of the replacement parts department."

J. Klein, of the Fifth Avenue Coach Co., described the methods employed by his concern for the control of replacement parts. Elliott P. Pratt, in charge of the service department in the Brooklyn branch of the White Co., outlined a system of prerequisitioned replacement parts. Other speakers were: Dan C. Kelly, Harry Langdon, J. Howard Pile, William G. Gow, J. W. Lord and C. O. Beck.

Indiana Sales Off 10.5%

INDIANAPOLIS, Oct. 16—New car sales in Indiana for September took a drop of 10.5 per cent under the August figure, according to an analysis of tabulations prepared by the Indianapolis Auto Trade Association. The September total was 3052 as against 3472 for the month preceding. The downward curve has continued since the end of June. Ford registrations for September dropped 12 per cent under August, the Ford figure representing 38 per cent of the total.

Murray Sale Order to be Asked Oct. 25

Perfection of Reorganization Plans Leads to Effort to End Receivership

DETROIT, Oct. 18—A hearing will be held in Federal Court, Oct. 25, to determine whether or not the Murray Body Corp. shall be sold, thereby terminating the receivership. Anyone objecting to the sale will have an opportunity to come into court at the hearing. If there are no valid objections it is believed that a date of sale will be set at that time. The reorganization committee represents 90 percent of the security holders and 95 per cent of the creditors.

When first formed the company had 150,000 shares of no par value stock, which was increased to 242,264 shares in 1925, carried on the books of the company at the end of 1925 at $8,538,-652. There was also $2,796,000 in preferred stock and $4,810,000 in bonds.

Under the proposed reorganization plan, common and preferred stocks are to be exchanged for new common stock at the rate of one share of preferred and $35 cash for two new shares of common or no cash payment and three-fourths of a share of new common for one of preferred. Common will be exchanged on the basis of a share of common and $10 cash for a half share of new common or no cash payment and one-fifteenth of a share of new common for a share of old common. The bonds will not be disturbed.

Merchandise creditors agreed to a settlement of 25 per cent of their claims in cash and the balance in common stock at the rate of $45 per share.

S. A. E. Sees Gary Plant

GARY, IND., Oct. 16—Some 30 members and guests of the Chicago Section of the Society of Automotive Engineers had an interesting inspection trip through the Illinois Steel Mills here this week. The party was met by a special train using a locomotive and two cars constructed like freight cars but with glass sides. Benches were provided and in these cars the inspection of the enormous plant was greatly facilitated.

Bureau Analyzes Brakes

WASHINGTON, Oct. 20—Exhaustive tests of brakes on a passenger car, which followed earlier laboratory experiments, by the Bureau of Standards, has brought from the Bureau a statement that sudden changes are liable to occur in the retarding power of the brakes and, although such changes usually are only temporary, they are likely to prove disastrous. The Bureau states that, with asbestos textile linings of representative types, increasing temperature lowers the coefficient of friction, largely if not entirely through the influence of the temperature rise on the saturant, and the application of water or oil may have a similar effect. All these effects are more or less temporary, the Bureau states, the lining recuperating with cooling, or the disposal of water and oil by applications of the brakes.

Firestone Expands Ford Tire Facilities

AKRON, Oct. 19—Tire factory additions totaling in cost more than $1,300,000 have been announced by two Akron corporations. With equipment, the total expenditures for expansion will aggregate nearly $2,000,000.

To make possible increased production of Ford size tires, the Firestone Tire & Rubber Co. will start work in two weeks on a four story addition to Plant 2 in South Akron, officials stated. The enlarged factory space and new tire making machinery will make possible an increase of about 20 per cent in Ford tire production, which now averages approximately 20,000 tires and tubes a day.

Construction of four new buildings at the Akron plant of the Godyear Tire & Rubber Co. was started this week, according to C. C. Slusser, vice-president. It is estimated the four will cost, without equipment, about $800,-000. All will be used as warehouses. When completed, they will add 348,000 sq. ft. of floor space to the Goodyear factories.

Goodyear officials say the increased warehouse facilities will enable production to be increased at the Akron plant by releasing space now used for this purpose.

Build Giant Hydroplane for Mediterranean Service

WASHINGTON, Oct. 20—What is claimed by its makers to be the largest hydroplane in the world will be launched in November by the Dornier Works at Friedrichshafen, Wurtemberg, Germany, according to report to the Department of Commerce from Consul John E. Kehl, Stuttgart. Accommodations are provided for 21 passengers and a crew of four persons—two pilots, a mechanic and wireless operator. The plane will be used for Mediterranean passenger service.

The body of the plane is 77.1 ft. over all; width 11.4 ft., has a cruising capacity of 1650 miles; a wing span of 28.5 meters; is equipped with two Rolls Royce Condor motors, each having 650 hp. and having a speed of 140 miles.

Koolhoven Planes Discontinued

PHILADELPHIA, Oct. 16—Word has been received here that the Nederlandsche Vliegtuig Industrie, builders of "Koolhoven" airplanes has discontinued manufacture of aircraft for the time being. This leaves the Fokker Airplane Co. as the only builders of aircraft in Holland.

Decide Final Plans for Air Regulation

Leaders in All Branches of Industry Hear Commerce Department Views

WASHINGTON, Oct. 21—The basis for a final draft of regulations applying to commercial air craft was laid at a meeting this week of air mail contractors and airway operators with William P. McCracken, Jr., the new Assistant Secretary of Commerce for Aeronautics. The regulations are to be drawn up in conformity with the Air Commerce Act of 1926.

All interests were brought together at the series of meetings, including insurance companies, publishers in the aeronautics field, sightseeing companies, manufacturers and designers and engine builders.

Among those attending were: L. D. Seymour, National Air Transport Co., Chicago; George Mixter, Division of Aeronautics, Stone & Webster, New York; Henry A. Berliner, Berliner Aircraft Co., College Park, Md.; S. S. Bradley, Aeronautical Chamber of Commerce; B. Russell Shaw, Stout Air Service, Inc., Detroit; J. C. Edgerton, Robertson Aircraft Co., St. Louis; Gen. J. F. Ryan, Colonial Air Transport, Boston; E. R. Reynolds, Philadelphia Rapid Transit Co.; Reed M. Chambers, Florida Airways Corp.; T. H. Huff, Harold R. Harris and Irvin E. Auerbach, Huff Deland, Inc.; R. G. Lockwoody and E. McD. Kintz, Army Air Service; R. D. Kirkpatrick, Naval Air Service; C. M. Young and R. S. Moore, Department of Commerce; J. A. McInavy, Alexander Aircraft Co., Denver; A. J. Elias, G. Elias & Bro., Inc., Buffalo; C. J. Buckner, Advance Aircraft Co., Troy, N. Y.; E. O. Osborn, Edo Aircraft Co., New York; Halbert E. Payne, Atlantic Aircraft Corp.; F. H. Russell and Curtiss Aeroplane & Motor Corp.

Underwriters Name Officers

NEW YORK, Oct. 16—Annual meetings were held this week by the Eastern Automobile Underwriters Conference and the National Automobile Underwriters Conference. The following officers were elected by the Eastern conference: C. W. Bailey of the American Co., Newark, president; C. P. Pitcher of the Royal, vice-president; and C. E. Case, of the North British & Mercantile, treasurer. The executive committee was unchanged except that C. B. Roult, of the National of Hartford, was elected in place of H. P. Whitman.

The National Conference at its annual meeting elected the following officers: William R. Hedge, of the Boston Insurance Co., president; William Mackintosh, of the Royal, vice-president; and Herbert W. Ellis, of the Phoenix of London, treasurer.

Industry Mourns Death of H. H. Bassett

Buick President Succumbs to Pneumonia in Paris—Rose from the Ranks to Position of Leadership—Funeral Plans Delayed

NEW YORK, Oct. 21—Far removed from the incessant activity of the great Buick Motor Co., the body of its president, Harry H. Bassett, lies coffined in Paris, sometimes called the playground of the world. It will be brought back to America for burial, probably at Flint, but all arrangements as to these final rites are in abeyance.

Stricken with pneumonia, Mr. Bassett died early Sunday morning. With him at his death were A. P. Sloan, Jr., president of General Motors, L. P. Fisher, president of Cadillac, and Donaldson Brown, vice-president of the parent corporation. Three weeks before this party of four had sailed from New York to visit the Paris and London shows and, as Mr. Sloan said, "to develop atmosphere to strengthen our effectiveness in European markets." Further extension of the trip will be abandoned so that the body may be escorted home.

The party had spent considerable time with executives of General Motors Export Co. in leading automotive centers and were in Paris for the exposition in which General Motors cars had prominent place. Mr. Bassett dined with others of his party on Tuesday evening. Wednesday he was taken ill and on Thursday was removed to the American Hospital at Neuilly. Double bronchial pneumonia had developed. His condition steadily became worse and he died Sunday soon after Mrs. Bassett with their young son had sailed from New York in an effort to reach him while he yet lived.

N.A.C.C. to Act Nov. 4

In deference to the fact that Mrs. Bassett was aboard ship and unacquainted with Mr. Bassett's death, the National Automobile Chamber of Commerce, through Charles Clifton, president, said it would make no formal statement on Mr. Bassett's death until the Nov. 4 meeting. Formal statements by C. W. Nash, Pierre S. duPont and others extolled the dead executive as an outstanding leader and mourned his loss.

Not since the death of the Dodge brothers in 1920 has the industry been so stirred by the passing of an individual. His death indeed is the first since then of a presiding automotive executive in the full-flush of his activity. The trip to Europe was but an incident to the greater development and power of the Buick company. Tomorrow he was to have come back with new ideas and plans and a fresh store of energy for putting them into effect. Now all this will fall to the lot of another leader, even as the sceptre was passed along to Mr. Bassett.

Harry H. Bassett

To the newcomer will pass the task of maintaining the leadership which the Buick company under Mr. Bassett has maintained during the past 11 years. Always one of the leaders, Buick became the leader in point of dollar value and remained in this position in every year that Mr. Bassett held the helm. On Jan. 19, 1920, the same directors' meeting that made Mr. Bassett president also brought forth the decision to expand the plant to a capacity of 750 cars a day. It had been building 500. Six years later the company was building 1200 cars daily and was expanding to bring this up to 1500.

Ranked High in Corporation

Besides being president and general manager of the Buick Motor Co., Mr. Bassett was a vice-president and director of General Motors Corp., and a member of its executive committee.

Like many other leaders in the automotive industry he rose from modest surroundings to become the head of the second largest automobile manufacturing business in the world. Despite his vast business responsibilities, he was a man who always found time for his friends and who devoted some of his energies to worthwhile civic projects, all features which made him respected by his fellow townsmen and by the 23,000 employees who worked for him.

Mr. Bassett was born on a farm at Utica, N. Y., Sept. 11, 1875, son of William L. and Mary Babcock Bassett. He was educated in the public schools of Utica and Ilion, and, upon graduating from the Ilion high school at the age of 16 years, took a position with the Remington Arms Co., as an office boy. For 14½ years he remained with the company, being promoted until he eventually became assistant general manager.

Joined Industry in 1907

Visioning the great future of the automobile, he resigned his position in 1907 to become assistant superintendent of the Weston-Mott Co., at Utica, manufacturer of axles. When the company built another plant at Flint, he served in the same capacity at both Utica and Flint and when Weston-Mott manufacturing activities were all transferred to Flint, he became works manager and assistant general manager, a position he continued to hold until 1913, when he was made general manager. In 1916 he was elected vice-president and continued to hold the position of general manager.

When the Weston-Mott Co. was combined with the Buick Motor Co., in 1915, Mr. Bassett was made assistant general manager of Buick, and, in April, 1919, was promoted to general manager. On May 1, 1919, he was elected a director and vice-president of General Motors Corp., and in January, 1920, was elected president of the Buick Motor Co.

Through his years of training as a production executive, Mr. Bassett was admirably suited for his responsible position. He had an exceptional understanding of men and his office was ever open to his employees. He spent much of his time in his shops familiarizing himself with his organization and maintained a personal acquaintance with thousands of his workers.

Promoted Flint College

During the past few years he had devoted much study and attention to the problem of his workers and he was largely instrumental in the establishment of a college at Flint, by the General Motors Corp.

He was always vitally interested in the Industrial Mutual Association, an organization of factory men having a membership of more than 20,000, which maintains luxurious club quarters and which furnishes mutual benefits to members at cost. The association established a trade school as one of its activities and he studied it carefully, and, as a result of his observations recommended to General Motors that it establish a college offering special courses in automotive mechanical and engineering work. Ground was recently broken for the college, which will accommodate 2000 students.

(*Continued on page 716*)

Men of the Industry and What They Are Doing

A. G. Partridge Joins Goodyear Sales Staff

A. G. Partridge, former vice-president and sales manager of the Firestone Tire & Rubber Co., has joined the Goodyear Tire & Rubber Co. He will be attached for the present to the staff of the sales manager.

Mr. Partridge entered the rubber industry with the old Diamond Rubber Co. in 1899 and joined Firestone in 1905 when that company first engaged in the manufacture of pneumatic tires.

His success in building up pneumatic tire sales led to his taking on more important responsibilities later. After leaving Firestone in 1921 Mr. Partridge spent some time with the Goodrich company and later conducted real estate operations in Florida.

Patterson Takes New Post

H. E. Patterson has been elected vice-president of "X" Laboratories, resigning as general manager of the Warner-Patterson Co. to accept the position. Mr. Patterson is well known in the automotive equipment field and is a director and a governor of the Automotive Equipment Association. He has also been connected with the Automotive Manufacturers Association and the National Hardware Association for a number of years.

Henderson Heads Exchange

Francis R. Henderson was re-elected president and Charles F. Wilson was re-elected vice-president at the first annual election of officers held here today of the Rubber Exchange of New York. Other officers chosen were J. Chester Cuppia, treasurer; Governors: William E. Bruyn, James P. Grant, David S. Kubie, Jerome Lewine, Fred Pusinelli and Clinton T. Revere; Inspectors of Election: J. Frank Dunbar, Jr., Frank W. Lovatt and Sylvan E. Weil.

Road Delegates Return

Members of the American delegation to the fifth International Road Congress at Milan returned to the United States this week, with the exception of H. H. Rice, who remained in Paris to attend the meeting of the International Automobile Chamber of Commerce. The party included T. H. MacDonald, P. D. Sargent, J. S. Mackall, Pyke Johnson and Mr. Rice.

Wilson and Lee Promoted

J. Alex Wilson has been elected vice-president of Beckwith-Chandler Co., Newark, and E. E. Lee has been elected treasurer. Both men also become members of the board. Mr. Lee has been assistant treasurer and takes the place made vacant by the death of B. L. Chandler, a founder and treasurer of the company. Mr. Wilson has been general sales manager.

CLEARY TAKES OVER EDITORIAL DUTIES

John Cleary, formerly advertising and sales promotion manager for Peerless Motor Car Co. and Cadillac Motor Car Co., has become associated with the Chilton Class Journal Co. as a field editor. He will write on general subjects of automotive interest for all Chilton Class Journal publications.

Mr. Cleary is widely known in the automotive field and has served in both factory and distributor fields. His earliest work was in connection with the merchandising of Cadillac cars in the Philadelphia territory. From this he moved to the factory where he directed advertising effort until the resignation of R. H. Collins as president, Mr. Cleary following Mr. Collins into the Collins Motor Car Co. which was to have produced the Collins six.

When Mr. Collins abandoned his plan to build a car under his own name to become president of Peerless, Mr. Cleary went with him. He resigned this work in July, 1925, undertaking advertising work in Miami.

Jones Gets Factory Post

C. A. Jones, sales manager of the Akron branch territory for the Seiberling Rubber Co., has been made assistant sales manager. Announcement of his promotion was made at a recent conference here of Seiberling branch managers. Mr. Jones has been with the Seiberling company since its organization. Col. J. L. Cochrun, of Detroit, will return to Akron to become branch manager.

Leonard Named by Robins

W. S. Leonard has been appointed representative of the H. M. Robins Co., of Detroit, in China. He formerly was a member of the Standard Oil overseas organization. His headquarters will be in Shanghai. Among the automotive lines he will handle are Gotfredson and Acme trucks.

Stiles Joins Edelmann

Jack Stiles has resigned as field representative of the Automotive Equipment Association and has been appointed sales manager of E. Edelmann & Co., of Chicago, manufacturers of automotive accessories.

Braunwarth Visits Europe

Otto Braunwarth, president of the Beaney Rubber Co. and the Trinity Wheel Corp., sailed for Europe this week on a business trip which will require one month.

W. S. Ballenger Resigns as Chevrolet Treasurer

William S. Ballenger, treasurer of the Chevrolet Motor Co., resigned his position before leaving on a trip around the world with Mrs. Ballenger, some months ago, it was made known, today. The announcement was issued following his return to Flint. Mr. Ballenger was dean of Flint automotive executives.

His history in the industry dates back to 1888 when he came to Flint from Cambridge City, Ind., to become a bookkeeper for the Flint Wagon Works. Through his ability as an accountant and his understanding of finance, became soon secretary and treasurer of the company.

In 1904, the Buick Motor Co., then a very small concern, was having its troubles. The company was purchased by the officials of the Flint Wagon Works and other Flint capitalists and moved to Flint. He was one of its first directors and stockholders. When the Chevrolet Motor Co. was organized several years later, Mr. Ballenger became treasurer of the new company which has grown to be the second largest producer of automobiles in the world.

Clark Divides Territory

C. C. Clark, who has been district manager of the Cadillac Motor Car Co. on the Pacific Coast, is being succeeded in the Pacific Northwest district by J. G. Keefe. The Pacific Coast territory has been divided and Mr. Clark will have California and Nevada as his territory. Mr. Keefe will make Seattle his headquarters. He has been technical representative of the Cadillac factory on the Coast for some months.

Hayes Joins Campbell-Ewald

Roy C. Hayes, former automobile editor of the Detroit Times, has joined the Campbell-Ewald Co., advertising agency, H. T. Ewald, president, announced today. Through the Campbell-Ewald Co. he will direct the publicity interests of the Chevrolet Motor Co.

Boehner Assigned Territory

George Boehner has been added to the sales organization of the American Hammered Piston Ring Co. and will have as his territory Minnesota and North and South Dakota. He will make his headquarters at Minneapolis.

Phineas Prouty

LOS ANGELES, Oct. 15.—Phineas Prouty, vice-president of the Autocar Sales & Service Co., of California, died at his home here last week following several months of declining health. Burial was at Geneva, N. Y.

Citroen Launches 1000 Daily Program

Reorganization of Plants Under American Experts Increases Capacity

PARIS, Oct. 7, (*by mail*)—Coinciding with the opening of the Paris automobile show, Citroen this week put into operation his new or reorganized factories which are unique in France not only by their size but by reason of the close cooperation between French engineers and American production experts which has made them possible. The Citroen plant has been laid down with a view to producing 1000 cars a day. As some of the factory units started operation only this week, present output cannot exceed 250 cars a day and the factory is unable to meet demand. Before the end of the year the factories will be producing 500 cars a day, of which 40 per cent will be sold in France and 60 per cent exported. Andre Citroen maintains that in view of the present growth of the motor movement there is nothing Utopian in providing for a 100 per cent increase during the next five or six years.

Four main units having a total area of 135 acres located within the City of Paris or in the immediate neighborhood, constitute Citroen's plant. This division of units has been made necessary by local conditions: The railroads around Paris are inadequate to handle the whole of the raw and finished products of a grouped factory; and water, power, coal and oil supplies could not be obtained in the required quantities in any one center. This division of units is also favorable to the recruiting of labor.

Budd Equips Steel Plant

The steel stampings department at St. Ouen, having an area of 431,000 sq. ft. has been equipped by the Edward G. Budd Mfg. Co., with Hugh L. Adams, vice-president of the company, personally supervising the work. This department is in full operation producing units for Budd bodies, chassis side rails and other stampings. The plant is now being run exclusively by a French staff and workers, with an output per head equivalent to that of similar plants in America.

The foundry and forges at St. Ouen, with an area of 42 acres are the newest of the buildings and are not yet producing to the required capacity. The entire plant has been laid down on the basis of 1000 automobile units per day of eight hours, this being the biggest in Europe.

The former Clement Bayard factory, increased in size to 1,162,000 sq. ft. is being made use of for the production of spare parts for old models, for accessories such as shock absorbers, horns, wind-screens, body hardware and also for ball bearings. Under the direction of an expert formerly with the S. K. F. Co., Citroen has put down a big production plant which is now supplying the whole of the ball bearings used in his car. It is stated that the annual cost of ball bearings has been cut from 30,000,000 to 10,000,000 francs.

The most important of the factory groups, at Grenelle and Javel, within the City of Paris, have an area respectively 592,000 and 2,625,000 sq. ft. These constitute the original works, considerably increased in size, and to which important additions are now being made. The whole of the assembly, including bodies, is done in these works and all completely finished cars are despatched from here. The units for assembly in the English, Italian and German plants are shipped direct without going through the Paris assembly plant.

Build One Model Only

Andre Citroen states that his policy is one model only, with a variety of body styles, and two light truck chassis with the passenger car engine. There appears to be an opinion in France that Citroen will be unable to maintain his present prices of 25,000 francs for the phaeton and 30,000 francs for the Budd-body sedan, but American experts who have been cooperating with him in the laying down of the present plant give it as their personal opinion that not only can these prices be held but they can be cut as production goes up, providing other governing conditions remain unchanged.

Prices on British Tires Now at Minimum Point

NEW YORK, Oct. 16—British tire prices are at rock bottom since the 15 per cent cut in England in early October, according to Sir George Beharrel, managing director of the Dunlop Tire & Rubber Co. They are now only 3 per cent over their point in May, 1925, when the tire advances started.

"It is quite obvious a 20 per cent restriction of crude will be put into effect at the end of this month," he said, "but this restriction probably will have no immediate effect of curtailing rubber shipments.

"The coal strike is affecting motor-car production in England and our tire sales have suffered to some extent as a result of this, but our sales are very satisfactory considering conditions in England," he said.

Chandler Orders Large

CLEVELAND, Oct. 18—Chandler-Cleveland Motors Corp. reports an increase of 150 per cent in sales during September this year over the same month of 1925. Big six sales increased 172 per cent and special and standard six sales 138 per cent over last year. Sid Black, sales manager says orders on the company's books assure peak production for the remainder of the year.

Florida Boost Plan Opposed by N.A.D.A.

Diversion of Part of Gasoline Tax for State Advertising Purposes Denounced

ST. LOUIS, Oct. 16—A scheme to use 25 per cent of the revenue derived from the four cent gasoline tax in Florida to carry on a national advertising campaign for the State has been vigorously denounced by C. A. Vane, general manager of the National Automobile Dealers Association, on behalf of the association. Mr. Vane declares that the N.A.D.A. will call on all Florida automobile dealers to oppose this scheme and on dealers throughout the country to take steps to check any similar proposal in other states.

The Florida scheme is backed by an advertising agency at Jacksonville which for a number of years has been endeavoring to have a part of the gasoline tax money set apart for State advertising purposes. On Oct. 6 this agency wrote to Charles E. Gambill, formerly president of the N.A.D.A., asking him to get the support of the association for the advertising plan which it was said would take $3,000,000 a year from the money paid in by motorists as gasoline taxes. It was stated that an effort is being made to bring about similar diversion of gasoline tax revenue in 34 other states.

Replying for the N.A.D.A. Mr. Vane declares: "As a national dealer body we are unalterably opposed to any such principle of taxation, and we shall see to it that the automobile dealers of Florida are warned against support."

Continuing Mr. Vane states: "You are trying to establish a principle in taxation which, if carried to its logical conclusion, would ultimately result in the wrecking of this business, or any other business which for the moment happened to appeal to the choice of the law makers as being a fit subject for such special taxation. Gasoline taxes," Mr. Vane said, "should be used for building and maintaining highways."

Germany Takes Over Plant

WASHINGTON, Oct. 20—The Udet works in Munich, Germany, a large airplane construction plant, which amalgamated last spring with the Rumpler works of Bavaria under the name of "Bayerische Flugseuqerke, A. G.," is reported to have been taken over by the Federal government, a cable to the Department of Commerce from Assistant Trade Commissioner Nash in Berlin states. Dr. Rumpler, connected with the Rumpler section of the company, has created considerable talk in Europe with his "airplane of the future," a giant ten-motor, three-tail bus, with accommodations for 100 and able to cross the ocean. Models of the plane are being shown in Germany.

Steel Buying Shows Continued Recession

Large Buying Last Month Reduces Current Sales—Aluminum Competition Seen

NEW YORK, Oct. 21—While the tapering-off in automotive demand for steel is generally ascribed to curtailment of consumers' operating schedules, and while this is undoubtedly true of some plants, the fact remains that not a few provided themselves early last month with sufficient tonnages to enable them to operate, if they wanted to, at top-notch rate without having to come into the market at this time. The recession in specifications is especially noted in the takings of parts makers. Obviously they are anticipating temporarily lessened demand for their products, and do not want to take on any more steel than orders in sight call for.

Compared with October, 1925, when there was a general upward movement in automotive demand for steel, accompanied by advances in sheet and strip-steel prices, the current month is somewhat of a disappointment, but, taking into consideration the brisk absorption of steel early last month, the somewhat slower pace that has set in appears as a perfectly normal reaction. While parts makers are not specifying as freely as they did a month ago, they continue to call for fair-sized tonnages, especially so spring manufacturers who are ordering forward cold-finished steel bars in round lots. Specifications against cold-rolled strip steel contracts have tapered off more than has the automotive demand for hot-rolled strip.

Producers of automotive alloy steels report slight recessions in specifications of parts makers, but are very hopeful of an early quickening in demand, basing this on what their customers tell them. The week brought no change in prices, the only development being slightly more uniform conditions in the steel bar market where 2c, Pittsburgh, appears to have become the generally quoted price for tonnage shipments. The 2.10c price for smaller lots does not appear to have become so generally established so far as has the round tonnage price level.

Pig Iron—Automotive foundries are buying what little they need, in single carlots. The market is quiet generally; producers striving hard to establish slightly higher prices. No representative sales have been made so far at the $19.50, base furnace price named by some of the Lake furnaces, but the Valley market seems to be holding its own at $18.50, base furnace.

Aluminum—About the only conclusion that can be drawn from the very meager cable reports of the impending formation of a Continental aluminum trust, along the lines of the European steel cartel, is that something has gone wrong with the gentlemen's agreement that is generally believed to have been in effect among the world's aluminum producers in the last few years. German producers are apparently reaching the point where their output enables them to be more aggressive, and, linked with France, Switzerland, etc., they believe themselves in stronger position for overseas trade. Germany shipped just enough aluminum into the United States this year to force the attention of the sole domestic producer to the potentialities of German competition. With the vast expansion in the American producer's output resulting from the operations of the new plant in Canada and increased output at the American-controlled Norwegian reduction works, the Germans apparently feel that the crucial time for a new deal has arrived. The aluminum market's artificiality becomes impressive in the light of its utter disregard of foreign price movements. The London home market declined last month 13 Pounds Sterling, bringing the price level down to a parity of 23 and 24c, without even a trace of effect on the American market which remains pegged at 27c.

Tin—The London bull speculators are still in control. American consumers offish.

Copper—Slightly better demand from domestic fabricators. Effect of newly formed Export Association on domestic market not expected to be felt for some time.

Lead—Quiet and steady.

Lycoming Sales Delay Inventory Three Months

WILLIAMSPORT, PA., Oct. 16—The Lycoming Mfg. Co. closed its machine shop this week for its semi-annual inventory and the rearrangement of machine tools, preparatory to a season of increased production.

The usual time for taking the semi-annual inventory is July 1, but this year the demand upon the company for motors was such that it was not possible to close the plant at that time.

Many departments of the company were closed for one day to allow inventory to be taken while others remained closed a longer time to permit the complete rearrangement of the additional machine tool equipment, which was installed earlier in the year to take care of the demand for the company's products. The company sees every indication of an increased demand for its engines.

The foundry and standard heater divisions of the company were not affected in the inventory arrangement.

Nicaragua Plans Roads

WASHINGTON, Oct. 20—All male inhabitants of the Nicaraguan Republic over 18 years of age, native or otherwise, are required to contribute to the construction and maintenance of highways under a new road-construction law, a cable to the Department of Commerce states. A highway service tax has been levied, payable in service or cash.

Lighting Groups to Meet

CHICAGO, Oct. 16—The annual meeting of the Automotive Lighting Association will be held in Chicago at the Drake Hotel, Nov. 4, at 10 A. M. This announcement is made by W. S. Murtfeldt of Cleveland, secretary of the association.

Financial Notes

Hupp Motor Car Corp. and subsidiaries for eight months ended Aug. 31, 1926, as filed with the New York Stock Exchange, shows net income of $2,717,814, after depreciation, Federal taxes, etc., equivalent to $2.97 a share earned on outstanding 913,809 shares of $10 par common stock. Consolidated income account for eight months ended Aug. 31, 1926, follows: Net sales $38,824,520, costs $35,834,459, operating income $2,990,061, other income $460,015, total income $3,450,076, depreciation $308,094. Federal taxes $424,168, net income $2,717,814.

Gabriel Snubber Mfg. Co. reports for the quarter ended Sept. 30, 1926, net income of $269,452 after depreciation and Federal taxes, equivalent to $1.34 a share earned on outstanding combined 200,000 shares of no par class A and class B stocks. This compares with $356,904 or $1.78 a share in the preceding quarter and $317,059, or $1.58 a share in third quarter of 1925. Net income on the above basis for first nine months of 1926 totaled $883,874, equal to $4.41 a share, comparing with $1,087,259, or $5.43 a share, in first nine months of 1925.

American-La France Fire Engine Co., Inc., for nine months ended Sept. 30, 1926, reports net income of $602,736, after interest and Federal taxes, equivalent after 7 per cent preferred dividends, to 87 cents a share (par $10) earned on 449,300 shares of common stock. This compares with $519,826, or 91 cents a share on 345,000 common shares outstanding in the first nine months of 1925. Net income for third quarter of 1926 was $196,532, equal to 28 cents a share on common, comparing with $202,913, or 29 cents a share in preceding quarter and $180,336, or 32 cents a share, in third quarter of previous year.

Allis-Chalmers Mfg. Co. reports for eight months ended Aug. 1, 1926, net profit of $2,262,893 after depreciation, Federal taxes, etc., equivalent after allowing for 7 per cent preferred dividend requirements, to $5.79 a share earned on 257,707 shares of common stock. This compares with $2,240,883, or $5.70 a share, on common in same period of 1925. Profit and loss surplus on Aug. 1 totaled $15,171,669 against $14,443,343 in previous year.

Chicago Pneumatic Tool Corp. and subsidiaries report for the nine months ended Sept. 30, net profit of $718,405, after depreciation, Federal taxes and interest, equivalent to $6.82 a share earned on $10,541,200 capital stock, compared with $460,609 or $4.44 a share on $10,368,600 capital stock in the corresponding period of 1925.

Goodyear Tire & Rubber Co. will pay $4.75 a share cash dividend on the preferred stock against back dividends of $29.75 Nov. 15 to stockholders of record Oct. 26, President P. W. Litchfield announced, following a meeting of the directors at Akron.

Gardner Motor Co. reports for eight months ended Aug. 31, 1926, profit of $96,824 before taxes. The company has outstanding 155,000 no par shares of stock.

Industry Mourns Death of Bassett

(*Continued from page 712*)

Besides his connection with the Buick Motor Co. and the General Motors Corp., he was a director of the Genesee County Savings Bank and the Workmen's Mutual Bank of Flint. He was a member of the Flint Country Club, Detroit Athletic Club and the Question Club. He was also a member of the Society of Automotive Engineers.

Mr. Bassett was twice married. His first wife, Nina Cole, died Aug. 17, 1911. On Oct. 30, 1913, he married Jessie M. Hood, of Jackson, Mich. They have two children, Harry Hood, born May 6, 1917 and William L. Bassett, born Aug. 23, 1920. He also leaves two sisters, Mrs. F. P. Mann and Mrs. E. R. Kapp, both of Flint, and his mother, who is 86 years old. His father died in Flint, Oct. 14, 1914, at the age of 92 years.

Among the tributes to Mr. Bassett were the following:

Charles W. Nash—"Greatly shocked to learn of death of my good friend H. H. Bassett. His death will mean a great loss to Flint. His family may receive some consolation from knowing that Mr. Bassett enjoyed the friendship and admiration of a very large number of prominent people and also that he was admired from the fact that he built himself up from a small beginning to one of the great Napoleons of the industry. I shall mourn his loss with his many Flint friends."

Pierre S. duPont, chairman of board, General Motors Corp.—"General Motors, its officers, directors, stockholders and employees have suffered a severe loss in the death of Mr. Bassett, identified as he was with the Buick organization and with the city of Flint. His value there was well known and well recognized. But outside of his home associations Mr. Bassett made himself a constructive leader in General Motors affairs. His broad viewpoint, confidence and courage commanded the respect of all. Mr. Bassett was a man liked and loved by those who knew him. Kind and courteous, with a ready smile and happy disposition he made his way to the heart of every friend and acquaintance."

Walter P. Chrysler—"News of Harry H. Bassett's death came as a profound shock to me personally. I have known him intimately since 1911. I watched his splendid rise and success in the business world and in his passing I am deeply conscious of the great loss sustained among his innumerable friends and especially by the motor car industry as a whole."

C. S. Mott, vice-president, General Motors Corp.—"It does not seem possible that Harry Bassett, my good friend and partner for over 20 years, has passed on. His loss will be terribly felt not only by his family and associates but all Flint will mourn and miss his energetic help and support in all good works."

Eaton Shows $303,542 Net

CLEVELAND, Oct. 20—Eaton Axle & Spring Co. reports for quarter ended Sept. 30, 1926, profit of $303,542 after charges but before Federal taxes, equivalent to $1.21 a share earned on outstanding 250,000 shares of no-par common stock. This compares with $465,595, or $1.86 a share, in the preceding quarter and $200,000, or 87 cents a share on 229,500 shares in third quarter of 1925. Profits for first nine months of 1926 totaled $972,773 or $3.89 a share, comparing with $605,641, or $2.64 a share in same period of previous year.

Tire Figures Reversed

NEW YORK, Oct. 21—Inventory and production figures for balloon casings and balloon inner tubes as shown in the report of the Rubber Association of America, carried in Automotive Industries last week, were reversed, the casings figures applying to tubes and vice versa.

Packard 1926 Profit Increases $3,652,505

DETROIT, Oct. 20—Packard Motor Car Co. reports for year ended Aug. 31, 1926, net profit of $15,843,586 after charges and Federal taxes, equivalent to $6.05 a share (par $10) earned on 2,616,626 shares of common stock, which were outstanding the greater part of the year. Including 15 per cent stock dividend paid Aug. 31, stock amounted to 3,004,264 shares and on this basis earnings were equal to $5.27 a share. This compares with $12,191,-081 in previous year, or $4.84 a share on 2,377,020 shares then outstanding.

Jordan Motor Car Co.

CLEVELAND, Oct. 20—Jordan Motor Car Co. reports for quarter ended Sept. 30, 1926, profit of $16,253 after depreciation and other charges but before Federal taxes, equivalent to $1.72 a share earned on outstanding 9437 shares of 7 per cent preferred stock. This compares with $125,382 before Federal taxes, or 86 cents a share on 126,000 shares of no par common stock, after allowing for preferred dividends in the preceding quarter and $146,381, or $1.03 a share on common, in first quarter of 1926.

Profit on above basis before Federal taxes for first nine months of 1926 totaled $288,016, equal to $1.89 a share on common after preferred dividends.

Star Shows $269,243 Net

NEW YORK, Oct. 20—Net operating profit of the Star car division of Durant Motors, Inc., for the month of September was $269,243 after depreciation and Federal taxes, according to Colin Campbell, vice-president. This makes total net operating profit of the Star division for June, July, August and September, $1,255,742.

Developments of the Week in Leading Motor Stocks

NEW YORK, Oct. 21—Motor shares during the past week were again under the influence of heavy selling pressure by professionals and the steady decline in the past few weeks has brought out a great deal of stock from speculative accounts. It has been many months since Wall Street turned so bearish on the outlook for the industry.

Price reductions by several large producers and reports of further curtailment of operations were the fuel on which the liquidating movement spread. The announcement by the Studebaker Corp. that its plants were on a four day weekly operating basis was the signal for a heavy selling drive against the entire group. General Motors became the center of heavy selling and found little support on the way down. Mack Trucks, another feature of the advance, became an outstanding leader in the decline going to new low levels. It is generally known in speculative circles that the forthcoming report of Mack will show a sharp falling off in profits as compared with previous quarters. Estimates place net profits at from $1.60 a share to $2 a share on the stock.

The statement in reliable quarters that General Motors directors were likely to give consideration to a large extra dividend at their meeting in November failed to stem the selling of the stock. And likewise estimates of earnings running at the rate of $24 a share annually with a cash balance of $175,000,000 had little effect in allaying bearish sentiment.

A majority of the motor stocks are now selling at or below this year's low prices. In many instances they are considerably above last year's low levels. While the liquidating movement does not appear to have run its course, it is good opinion in well-informed circles that many issues have reached levels where they will begin to attract investment consideration. The decline thus far has been somewhat greater than the decline in other representative groups on the Exchange and many issues are now selling to yield around 10 per cent or more on their dividends.

Timken Roller Bearing was an outstanding feature among the accessory issues advancing into new high ground. There have been rumors of a contemplated stock dividend on this issue which lack official confirmation. The rise apparently is based on the company's prospects in the railroad field following the receipt of an order recently for bearings to be used on railroad equipment.

Rubber stocks sagged with the rest of the market, but there was no particular feature in this group.—E. S.

A. E. A. Committee to Report Need for Wider Sales Work

Would Have Association Subordinate Judicial Activity to Promote Merchandising — Cooperation of Car Manufacturers and Dealers Termed Important

CHICAGO, Oct. 16—The useful field of activity of the Automotive Equipment Association from now on as visioned by the special committee on market development lies in the direction of merchandising and selling development rather than in judicial activities.

This point is brought out in a report made by the Market Development Committee outlining in a general way how the committee believes this work should be carried on and stating that a complete recommendation will be reported to the annual convention of the A. E. A. in Chicago Nov. 8 to 13. The committee's conception of the enlarged merchandising activity of the future is defined as follows:

"To successfully and adequately handle the work it is the opinion of your committee that it will be necessary to develop a special merchandising structure within the association, under the direction of a trained able merchandising expert—someone of the type of men who have addressed our merchandising sessions, a man able to organize, develop and administer three phases that make up a national merchandising campaign, selling, publicity and trade organization development.

"Coordination and cooperation with the national associations of car manufacturers and car dealers is necessary to get their support and eventually their active cooperation and coordination. Without this, and with the greater merchandising campaign instituted purely as an A. E. A. activity, the effort will be met with much less success.

"It is the opinion of your committee that it is an eventual possibility that this greater merchandising campaign can be made the basis of a joint coordinated effort by all groups of the industry to better serve the consumer and thereby find greater profits and greater security for our various businesses."

Seek Man in Each Zone

The committee stated that at present the plan of adding a field merchandising man for each zone is the best method of promoting the merchandising work. It outlined as follows, however, the structure that it believes will be necessary to develop the comprehensive plan that will be reported at the November meeting:

"It is the sense of your committee that it is necessary to set up a new structure which we will call the Market Development Department, with an executive manager. Under the manager's direction there should be three or more major activities, namely, (1) merchandising, (2) publicity, (3) trade organization development, each supervised by a department manager.

"Under publicity there should be formed a central bureau, this bureau to advise ways and means of obtaining national advertising for the benefit of the industry, trade paper publicity and advertising and newspaper publicity and advertising.

"The scope of the merchandising department as presently constituted should be continued and if necessary enlarged upon."

Pro-Rata Expense Plan

This undertaking would require a great deal of money and the committee stated that several methods of raising the funds are being considered. These methods include the pro rata assessment of members on the basis of sales.

The special market development committee, which was appointed at the Montreal meeting last summer, is composed of W. T. Morris, chairman, American Chain Co.; N. F. Ozburn, Ozburn-Abston Co.; R. W. Proctor, Black & Decker Mfg. Co.; A. C. Storz, Storz Western Auto Supply Co.; H. E. Ervin, Canadian Raybestos Co., Ltd.; R. J. Cahall, Cahall Motor Supply Co.; T. K. Quinn, National Lamp Works; E. V. Hennecke, Moto Meter Co., Inc., and L. A. Safford, McQuay-Norris Mfg. Co.

Another meeting of this committee is to be held in Chicago Nov. 3 and 4 to further formulate the greater merchandising campaign.

Hyatt Crosses Bay

OAKLAND, CALIF., Oct 14.—The Hyatt Roller Bearing Co. has established western headquarters here. The San Francisco office is to be closed, and the fixtures moved to the new Oakland offices. Territory to be served from this headquarters will cover everything from Canada to Mexico and east as far as the western boundary of Colorado. This is the third division of General Motors Corporation to locate western headquarters in Oakland, the other two being Chevrolet and the Fisher Body Co.

Trumbower to Teach Transport

WASHINGTON, Oct. 16—H. R. Trumbower, chairman of the Committee on Highway Finance of the Highway Research Board, has resigned as Senior Transportation Economist of the United States Bureau of Public Roads to become Professor of Transportation at the University of Wisconsin. One of his new duties will be the development of a highway transport curriculum. Dr. Trumbower will not sever entirely his connection with the Bureau of Public Roads, but will hold his position with the Highway Research Board and continue his research work. He is now preparing for the Research Board a report on the disposition of motor vehicle revenues in the United States.

Carolina Sales Up Despite Ford Loss

CHARLOTTE, N. C., Oct. 18—A total of 43,270 new automobiles were sold in North Carolina in the first eight months of this year, as compared with 42,422 new cars sold in the same period of last year, according to figures compiled by C. W. Roberts, of Charlotte, vice-president of the Carolina Motor Club. The sales in South Carolina for the first eight months of this year numbered 17,465 cars, as compared with 19,071 cars for the same period of 1925, Mr. Roberts said.

North Carolina set its record for new car sales in August, this year, when sales totaled 7731 cars, an increase of about 3000 cars over the number sold in the same month of last year, according to the Motor Club's figures.

Sales of Ford cars in this State in the eight-month period were 22,791 cars, as compared with 29,092 cars sold in the same period of last year, the announcement said.

The announced figures indicated that sales of commercial cars numbered 1012 in August, as compared with 425 in the same month of 1925.

Fisher to Spend $312,000 on Flint Plant Additions

FLINT, Oct. 16—Building permits were issued to the Fisher Body Corp. for the erection of two new additions to the plant which they recently purchased from the Flint Motor Co., and which is being equipped for the manufacture of bodies for Buick. The additions will cost $312,000.

A dry kiln costing $192,000 is provided in one of the permits. The kiln will be one-story brick construction, 150 x 268 ft. The other permit was for a power house costing $120,000.

Tractor Exports 3018

WASHINGTON, Oct. 16—August exports of tractors amounted to 3018 units, valued at $1,859,519, or only about one-third of the exports in this same classification in August, 1925, reports to the Agricultural Implements Division of the Department of Commerce show.

The reports point out, however, that the August, 1925, shipments were abnormal, amounting to 9191 units, valued at $5,254,161 and the shipments of August, 1926, are considered large.

Reduction Unlikely in Italian Tariff

NEW YORK, Oct. 16—Small hope for a downward revision of tariffs, which would permit increased importation of American automobiles into Italy, is seen by Pyke Johnson and H. H. Rice, members of the American delegation to the Fifth International Road Congress at Milan, in their report to the board of directors of the National Automobile Chamber of Commerce which they represented.

"Italy has 3,000,000 bicycles and but 70,000 automobiles, with a population of around 42,000,000," the report states. "On account of the high duty most of the cars noted are Italian, except for tourists, who are coming in from all parts of Europe. Relatively few American cars are imported, lack of service as well as a prohibitive duty being sufficient reason. No help is held out by American government representatives for lower tariffs."

The report states that Isotta Fraschini is making about forty cars a month. In addition the company has orders for airplane motors from the government which should keep the factory operating at full force for the next 18 months. The Fiat factory is building 200 cars a day, of which two-thirds are exported and but one-third sold in Italy.

Fare Concession Granted

CHICAGO, Oct. 16—A fare-and-a-half round trip rate from any point in the United States will be granted delegates to the annual convention of the National Association of Finance Companies, Nov. 15-16, according to C. C. Hanch, general manager of the association. Mr. Hanch also announced that in response to a letter to members the association has received a big supply of suggestions of subject-matter for discussions during the meeting. These suggestions now are being gone over in the process of program building.

Coming Feature Issues of Chilton Class Journal Publications

Nov. 4—Motor World Wholesale. Annual Marketing Issue

Dec. 10—Operation and Maintenance—Service Station Equipment Issue

Dec. 15—Commercial Car Journal—Good Roads Issue

Jan. 1—Automobile Trade Journal. Annual Show Issue

Jan. 6—Motor Age. Annual Show Issue

Jan. 15—Commercial Car Journal—New York Show Issue

Jan. 27.—Motor Age—Chicago Show Issue.

Propose World Statutes to Govern Air Shipping

WASHINGTON, Oct. 16.—A meeting of the International Air Traffic Association, attended by representatives of 18 European countries, has just been ended in Berlin, a report to the Department of Commerce states. A tentative draft for international aviation bills of lading was adopted by the conference and progress was made toward codifying stipulations concerning pilots permits and international freight insurance. A co-ordinated European winter schedule was discussed.

Stewart Sales Increase

BUFFALO, Oct. 16.—The Stewart Motor Corp. reports its domestic business in commercial cars fully 35 per cent greater this year than last and steadily increasing from month to month. Its foreign truck business is fully 40 per cent greater than last year and is also on the increase. The exported trucks are being widely distributed, no one country taking any exceptional number more than another.

Thicker Truck Tires Reduce Road Impact

WASHINGTON, Oct. 18—Increasing the thickness or profile height of motor truck tires has a very marked effect in reducing road impact in both single and dual mountings, the United States Bureau of Roads has learned after a series of exhaustive tests.

Other conclusions reached as a result of the test are (1) thickness and narrowness of tread rubber are desirable in reducing road impact reaction; (2) that as static load increases, road impact reaction increases; (3) as static load increases, the ratio of road impact reaction to static load decreases; (4) that appreciable variation of cross-sectional rubber, or breaks in its continuity, cause heavy repeated impacts to be delivered to the road; (5) that dual mounted tires should always be mounted with the tread designs staggered; (6) that maximum impact forces obtained with motor truck tires in service can be measured with an accuracy sufficient to determine results and (7) that in the tire equipments tested, all of which were standard, dual mounting caused heavier impact forces than the corresponding single mounting of the same total load-carrying capacity. This last conclusion was determined on a pneumatic-tired, 2-ton truck and a solid-tired 5-ton truck.

Arrange Research Reports

WASHINGTON, Oct. 16—Meetings are being held by the Research Committees of the Highway Research Board to complete reports to be made at the sixth annual meeting of the board, to be held in Washington, Dec. 2 and 3. Arrangements are being made to accommodate at this year's meeting an even larger attendance than last year, when 300 delegates from 28 States, 25 universities and two foreign countries were at the gathering.

Calendar of Coming Events

SHOWS

Brussels .....Dec. 4-15
Buenos Aires .....Dec. 7-20
Ninth Argentine Automobile Show, Palermo Park.
Cairo .....Feb. 15-March 15
First International Motor Show.
Chicago .....Nov. 8-13
Coliseum, Automotive Equipment Association.
Chicago .....Nov. 8-13
Accessory Exhibit, Armory.
Chicago .....Nov. 15-19
Hotel Sherman, National Standard Parts Association.
Chicago .....Jan. 10-15
Coliseum, American Road Builders' Association.
Chicago .....Jan. 29-Feb. 5
National, Coliseum, National Automobile Chamber of Commerce.
Chicago .....Jan. 29-Feb. 5
Annual Salon, Hotel Drake.
London .....Oct. 21-30
Los Angeles .....Feb. 12-19
Annual Salon, Hotel Biltmore.
New York .....Oct. 20-30
Electrical and Industrial Exposition, Grand Central Palace.
New York .....Nov. 28-Dec. 4
Annual Salon, Hotel Commodore.
New York .....Jan. 8-15
National, Grand Central Palace, National Automobile Chamber of Commerce.
Paris .....Dec. 3-19
International Aeronautic Exposition, Grand Palais.
Ponce, Porto Rico .....Dec. 1-12

CONVENTIONS

American Road Builders' Association, Congress Hotel, Chicago....Jan. 10-15
American Welding Society, Broadway Auditorium, Buffalo .....Nov. 17-19
Associated Manufacturers of Fabric Auto Equipment, Inc., La Salle Hotel, Chicago .....Nov. 13
Automotive Accessories Association, Chicago .....Nov. 8-13
Automotive Lighting Association, Drake Hotel, Chicago .....Nov. 4
Automotive Equipment Association, Coliseum, Chicago .....Nov. 8-13
National Association of Finance Companies, Palmer House, Chicago .....Nov. 15-16
National Automobile Dealers Association, La Salle Hotel, Chicago..Feb. 1-3
National Safety Council, Annual Congress, Detroit .....Oct. 25-29
National Standard Parts Association, Hotel Sherman, Chicago....Nov. 15-19
National Tire Dealers Association, Inc., Memphis, Tenn. .....Nov. 16-18
Society of Automotive Engineers, National Transportation and Service, Boston .....Nov. 16-18

RACES

Dallas, Texas .....Nov. 11
Los Angeles .....Nov. 25